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MBA PROFESSIONAL REPORT

ESUPPO: NEXT GENERATION

December 2017

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13. ABSTRACT (maximum 200 words)

This study evaluates eSUPPO and suggests an updated version for the U.S. Navy Supply Corps community. To accomplish this task effectively, a comprehensive examination of the current capabilities, via focus groups and surveys, assesses how well the mobile app meets the needs of the Supply Corps community.

The analysis begins by understanding the unmet needs experienced by Supply Corps officers while using eSUPPO. Next, the authors of this study identify the improvements that should be made to the app. After a complete analysis of eSUPPO's current "As-Is" processes, the study takes the information gathered from both the survey and focus groups, develops and recommends a "To-Be" process, and presents the result to NAVSUP Business Systems Center (BSC).

The authors of this study estimate that the Supply Corps community should benefit greatly from an upgraded app, as easy access to the most important information would be readily available when needed. The upgraded version of the app would include a mentoring section to provide junior Supply Corps officers with the opportunity to receive advice from a senior officer in any fleet concentration area. The app would also bring the fleet closer together by including an announcement section for all the fleet concentration areas, which would list current and future events taking place in each location. An operational icon will also be included in the upgraded version with the contact information for all the Fleet Logistics Centers.

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ESUPPO: NEXT GENERATION

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LIST OF ACRONYMS AND ABBREVIATIONS

ALNAV	All Navy Message
AQD	Additional Qualification Designator
BSC	Business Systems Center
CAC	Common Access Card
CWO	Chief Warrant Officer
DLA	Defense Logistics Agency
FLC	Fleet Logistics Center
FTS	Full-Time Support
GMAT	Graduate Management Admission Test
GSA	Global War on Terrorism (GWOT) Support Assignment
LDO	Limited Duty Officer
NAVADMIN	Naval Administration Message
NAVSUP	Naval Supply Systems Command
NAVSUP OP	Naval Supply Corps Office of Personnel
NPS	Naval Postgraduate School
PII	Personally Identifiable Information
POC	Point of Contact
TWI	Training with Industry

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I. INTRODUCTION

A. BACKGROUND

1. Information

This study evaluated the capabilities that currently exist in eSUPPO. eSUPPO was launched in early 2016, and it provides users with a direct connection to the Supply Corps Community 24 hours a day. Many questions that would normally wait until after the weekend is over, or until the next business day, can now be answered with the information that is available on the app. The app is easy to use. It reduces time that would otherwise be spent on the computer searching for an answer to a particular question, and it keeps the Supply Corps Community informed, and for information to be diffused at a more rapid pace. Below are some of the commonly used functions within eSUPPO.

a. Billets

The Billet function provides a listing of all the upcoming available billets for Supply Officers ranking from O-1 to O-6, Limited Duty Officer (LDO)/Chief Warrant Officer (CWO) and Full-Time Support (FTS)/Global War on Terrorism Support Assignment (GSA). Within the Billet function, a listing of all the emergent fill, or hot fill billets are clearly listed. In the past, the listing of all the billets was only accessible with the use of a computer, a CAC and a reader. Some Supply Officers were able to access from home, but most could only access from the government computer. eSUPPO eliminated the need for accessing the billet listing from a computer, which significantly reduces the time it takes to obtain the information.

b. News

Within the News function, Supply Officers are able to find the Office of Personnel (OP) Monthly, Flashes, Naval Administrative messages (NAVADMINs)/All Navy messages (ALNAVs), Newsletters, Commander's Guidance and Food Flashes along with some additional items. A NAVADMIN that is released late on a Friday evening can now be viewed at any moment during the weekend. If immediate attention is

required on a particular item, action can be taken much earlier instead of waiting until Monday or later, in the event of an extended weekend due to holiday.

c. Programs

Within the Program function, the guidance to various career milestone programs can be found. The information listed within the program function includes Internship, 810/811 and Training with Industry (TWI). The Supply Corps Internship program is for junior Supply Corps Officers, and it offers training within eight specialties within the Supply Corps: Acquisition Contracting, Operational Logistics, Joint Operational Logistics, Business Enterprise Management, Transportation, Business Financial Management, Integrated Logistics and Petroleum.

The 810 program provides selected Supply Corps Officers with a qualifying Graduate Management Admission Test (GMAT) score, with the opportunity to attend one of the top 30 civilian Business Universities within the United States to obtain a Master's Degree. The 811 program is similar to the 810 program but the 811 program is specific to the University of Kansas. The TWI fellowship is one year in length, and it is offered to selected Supply Corps Lieutenants and Lieutenant Commanders to serve at Starbucks, Home Depot, Federal Express or Exxon Mobil to learn practical managerial skills.

d. It's Your Career

It's Your Career playbook within the Program function provides a useful career guide for Supply Corps Officers. It lists the various milestones which must be achieved during each rank. Some of the items that can be found within the Playbook are a description of the Supply Corps internships, Additional Qualification Designators (AQD), and Subspecialty Codes. Additionally, the Playbook provides a description of the Officer Summary Report (OSR), Performance Summary Report (PSR), and the Officer Data Card (ODC).

B. RESEARCH GOALS

The intent of this study is to analyze the current eSUPPO, and determine how to create the Next Generation of the app, to better meet the needs of the Supply Corps

community. The study includes a summary of the current "As-Is" processes and identifies areas of concern, to properly address those concerns. If there are deficiencies identified throughout this research, the authors of this study will compile, interpret, consolidate and forward to NAVSUP BSC for future versions of eSUPPO. The "To-Be" model will provide NAVSUP BSC with examples of recommended changes, and how those changes will better meet the needs of the end users.

1. Purpose Statement

The purpose of this study is to provide recommendations to NAVSUP BSC, for future improvements to better serve the U.S. Navy Supply Corps Community. The desired end state will include a more efficient information flow for eSUPPO users.

2. Research Question

What features should be included in an upgraded version of eSUPPO, to better meet the needs of Supply Corps Officers?

C. THESIS ORGANIZATION

Chapter II is a discussion of the Supply Corps and eSUPPO. It describes the mission, vision and the structure of the Supply Corps. Additionally, it describes the reason for having a community app, the benefits it provides and also the functional areas that require improvement.

Chapter III is an understanding of the research methods applied during the study. The chapter begins with the description of the two focus groups held, and the web-based survey that was delivered to the Supply Corps Officers assigned to Naval Postgraduate School (NPS).

Presented in Chapter IV is the analysis of the focus group results, and the answers to the survey from Chapter III. The analysis provided the basis for the changes the authors recommend for the Next Generation of eSUPPO.

Chapter V comprises a summary of the study, conclusions and recommendations. The recommendations include opinions on how eSUPPO can better meet the needs of

Supply Corps Officers, develop methods for providing feedback for continuous improvements, and provide opportunities for future research.

II. LITERATURE REVIEW

The Supply Corps is a professional community within the United States Navy, comprising of Supply Corps Officers, and Supply Enlisted Personnel, positioned far and wide in an assortment of duty stations. Notwithstanding active duty personnel, there is a tremendous system of Supply Corps Officer and Enlisted Reservists around the globe supporting our dynamic naval forces (NAVSUP, 2017).

A. ABOUT THE SUPPLY CORPS

Supply Corps personnel are trained at the Naval Supply Corps School, at Naval Station Newport in Newport, Rhode Island. The mission of the Navy Supply Corps School (NSCS) is to create Navy Supply Corps Officers and other logisticians through incorporated instruction while fostering personal, specialized and administrative abilities, to meet present and future worldwide security challenges. As the primary accession point for new Supply Corps Officers, the Basic Qualification Course (BQC) instructs on the basic principles of logistics (CNIC, 2017). The NSCS delivers resident and non-resident training via a variety of methods to approximately 2,400 logisticians each year (CNIC, 2017).

Naval Supply Systems Command (NAVSUP) is the headquarters for the U.S. Navy Supply Corps Community and is located in Mechanicsburg, Pennsylvania. NAVSUP utilizes an overall workforce in excess of 22,500 military and regular civilian staff (NAVSUP, 2017). In addition to supply chain management, and ordnance, NAVSUP supervises an assorted portfolio to include contracting and fuel support services among many others (NAVSUP, 2017). NAVSUP is a global enterprise, consisting of 12 worldwide commands (NAVSUP, 2017).

1. Mission

The mission of NAVSUP is to deliver sustained worldwide logistics support to the Warfighter (NAVSUP, 2017). NAVSUP oversees supply chains which support Naval air, surface, and sub-surface assets along with ordnance inventory management (NAVSUP,

2017). Additionally, they provide an extensive variety of base and waterfront support by coordinating delivery of materials and contracting for supplies (NAVSUP, 2017).

NAVSUP is additionally in charge of various Quality of Life programs including Exchanges, Lodges and Personal Property Program to name a few. They also oversee the Food Service Program, with procedural accountability for general messes afloat and ashore (NAVSUP, 2017).

2. Vision

To develop self-sufficient, astute logisticians with extensive competencies to deliver key logistics solutions for sustained mission readiness (NAVSUP, 2017).

3. Guiding Principles

The four guiding principles of the Supply Corps Community listed below were retrieved from the NAVSUP website (NAVSUP, 2017).

- Unyielding pursuit of customer satisfaction
- Persistent warfighter support
- Adaptable environment for growth
- Merits individual honesty, fortitude and accountability

4. Capabilities

The NAVSUP Enterprise provides worldwide customer support and utilizes three main business lines to execute their mission: Global Logistics Support with their headquarters in San Diego, Weapon Systems Support with headquarters in both Mechanicsburg and Philadelphia, and Fleet and Family Support (NAVSUP, 2017). NAVSUP provides support in preserving warfighter preparedness and improved quality of life (NAVSUP, 2017).

B. ABOUT ESUPPO

eSUPPO was created for the Supply Corps Community to provide quick and easy access to community information. Apps are now available for just about everything, and the Supply Corps made the decision to create eSUPPO for the community. The information available on the app can be found on the internet via various websites, but eSUPPO was able to consolidate the information from many websites into a convenient app with the most frequently searched information in one place.

As revealed in the 2016 Supply Corps Newsletter article by Karla Gabel, the development of eSUPPO was a partnership between NAVSUP BSC and the Navy Supply Corps Office of Personnel (NAVSUP OP) team. She further noted that as the first smartphone mobile app, NAVSUP BSC developed eSUPPO in less than six months. Gabel further mentioned that the release of the beta version in January 2016 was preceded by a rapid development cycle four months earlier and concluded with the live release in early spring of 2016 (Gabel, 2016, pp. 30-31).

> NAVSUP BSC, provided a description of the eSUPPO mobile app requirements, which was retrieved from the Apple iTunes Store, and states; Supply Officers (SUPPO's) and others in the Supply Corps community can quickly access Supply Corps information using the new eSUPPO app. You no longer have to log on to multiple websites to find what you need. You can quickly find NAVSUP news, billet listing, educational program information, NAVSUP instructions, and links to related Facebook pages and websites. Using eSUPPO, you can contact your detailer, access forms, and provide feedback via various surveys. eSUPPO can be used offline. Previously downloaded content can be viewed even when you have no Wi-Fi or cell service. When you're online, content automatically updates. (eSUPPO, 2016, Version 1.0.26)

eSUPPO has served the Supply Corps community well, but additional functions may be required to fully meet the needs of the users. The Supply Corps operates in a global environment and our study determined that additional functions may be required within the app to support most types and levels of operations.

The Supply Corps is the business manager for the Navy. They manage and operate in the logistics fields, which is very similar to how other major supply chain organizations (such as Amazon, Apple and Walmart) conduct business throughout their

respective industries. NAVSUP BSC would like to improve the app to keep pace with the increased use of technology in the business world, as well as to provide an educational and informative tool for all Supply Corps Officers. It is important for the Navy to utilize many of the same practices used by these major supply chains, and to continuously improve upon technological advancements, in order to keep up with rapid industrial technological changes.

C. USABILITY CONSIDERATIONS

Usability for any app should be a major concern when designing or updating an existing application. The article titled "*10 Usability Considerations for Your Mobile App*" lists some usability considerations that should not be overlooked (Gerber, 2015). The five of the most applicable issues include the following:

1. Easy Navigation

Inadequate navigation is among the highest issues experienced by app users, meaning that users are unable locate what they are searching for and often take too long to find it (Gerber, 2015).

2. Aesthetics

Aesthetics is defined as very enjoyable, or delightful in appearance ("Aesthetic," n.d.). When dealing with appearance, the process normally begins with a general outline; to engage users on a deeper level, aesthetics should follow that outline and incorporate speed and interaction to enhance user experience (Gerber, 2015).

3. Complete Information

According to Gerber (2015), decreasing the amount of content, while maintaining vital information, should be a major consideration when making a decision on the reduction of information content within an app.

4. Quick Movement

To encourage people to use a mobile app, the screen requires streamlined capability since the goal is to inspire individuals to utilize it. Minimizing the number of clicks a user has to make on an app facilitates the use of a smaller screen on an app versus a laptop. Users desire to scroll up or down within a mobile app as opposed to alternating between pages as a user would do on a laptop (Gerber, 2015).

5. Platform Usability

Some mobile users are frustrated that the app does not operate on their specific model of phone (Gerber, 2015).

D. INNOVATION DIFFUSION

A theory developed by E.M. Rogers in 1962 called the Diffusion of Innovation (DOI), is one of the oldest social science theories. DOI spreads through a social construct and either gains or loses momentum within that specific population (Diffusion of Innovation, 2016). As a result, the adoption of innovation diffusion within a social system promotes new social norms and philosophies (Diffusion of Innovation, 2016).

"Managers have long been interested in the diffusion of innovation; the thinking being, if one can better understand how innovations diffuse, one can better predict and manage that diffusion" (Gourville, 2006, para. 1). Innovation diffusion creates more failure than success, and those that experience success must remain persistent and dedicated due to the time it takes to achieve success (Gourville, 2006). According to Gourville (2006), "as early as the 1960s, Rogers suggested five product based factors that largely governed the rate of innovation diffusion." (Gourville, 2006, para. 6). Rogers' Five Factors include the following:

1. Relative Advantage

The capability of a product being better than that of which it is replacing is an improvement and an advantage over its predecessor (Gourville, 2006).

2. Compatibility

Compatibility is the ability of a product to maintain consistency to a certain standard (Gourville, 2006).

3. Complexity

Gourville defined (2006, para. 6) complexity as "the degree to which a product is difficult to understand and use." The more transparent complexity is to the end-user, the more effective a mobile app becomes.

4. Trialability

Trialability is the level to which a commodity may be tested on a finite basis (Gourville, 2006).

5. Observability

Observability is the standard to which commodity utilization and significance are noticeable to others (Gourville, 2006).

E. EMPLOYEE ENGAGEMENT WITH ENTERPRISE APPLICATIONS

Improving efficiency should be the goal of every organization. An app can bring employees closer together regardless of distance, and it can increase communication effectiveness. Figure 1 is a comparison of employees of the past versus employees of the future (Fliplet, 2015).

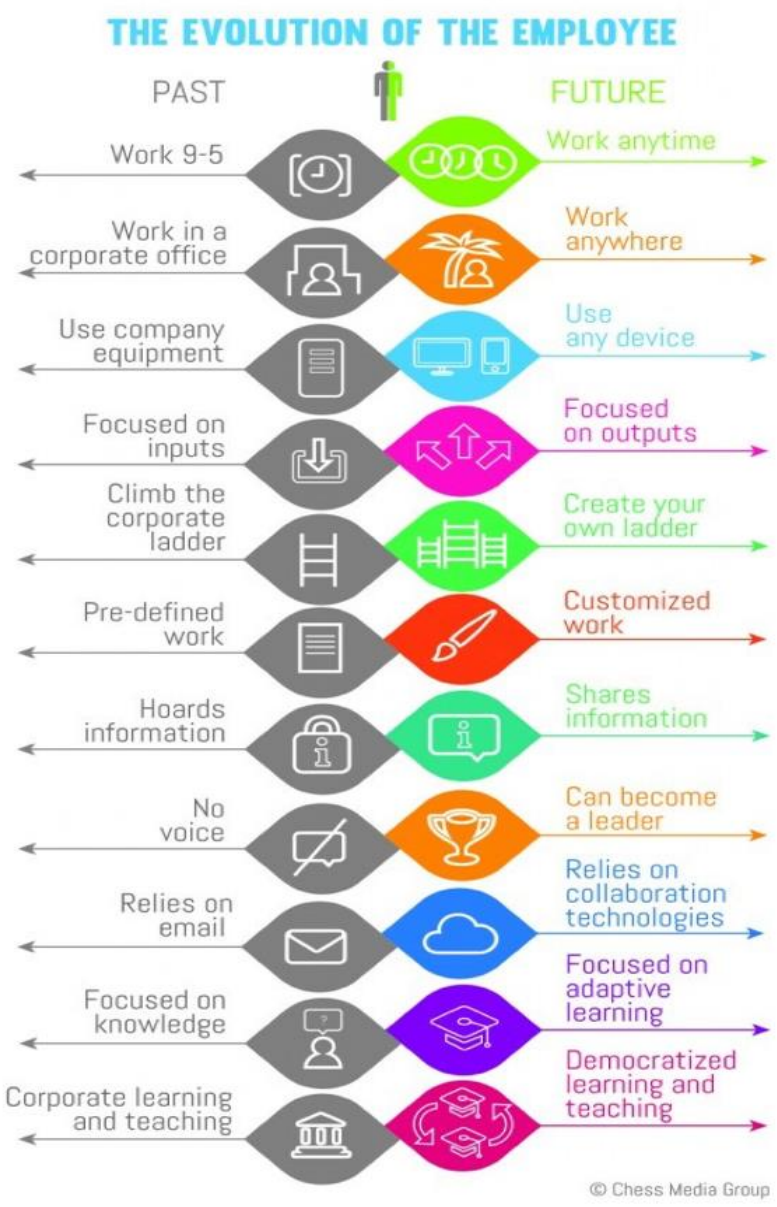

Figure 1. The Evolution of the Employee. Source: Fliplet (2015).

The key ideas expressed in Figure 1 show how future employees behave when compared to employees of the past. Employees demonstrate that those types of changes are grounded by flexibility and focus on time, geography and working techniques (How Mobile Apps Are the Key Improving Employee Engagement, 2015). The infographic in Figure 1 summarizes that work ideals depend upon internal communication, business

structure and the implementation of enterprise applications (Fliplet, 2015). There are 11 features listed in Figure 1, but only the following three are most applicable.

1. Flexible Work

The most important of these factors is the ability of an employee to work from any location at any time. This flexibility maximizes work production at home, on the go, between meetings as well as other locations outside of the office (Morgan, 2017).

2. Shared Information and Learning

Past employees resisted information sharing, while future employees will join forces and be more risk-tolerant to achieve success through collaboration (Morgan, 2017). With enterprise applications, today's employees understand that information exchange and knowledge sharing will become the norm to achieve maximum success. (Morgan 2017).

3. Better Communication

"The employee of the future will have long given up on email as an exclusive platform for daily communication with colleagues" (Morgan, 2017, para. 17). Mobile apps are a much faster means of communication within the business world that in the past was dominated by email (Morgan, 2017).

F. BARRIERS TO DIFFUSION

Many organizations experience inertia at various points in the business cycle, and with various projects. "Organizational inertia is the tendency of a mature organization to continue on its current trajectory, this inertia can be described as being made up of two elements; resource rigidity and routine rigidity" (Gilbert, 2005, para. 1). Resource rigidity focuses on the behavioral response, while routine rigidity pays particular attention to behavioral pattern biases (Gilbert, 2005).

An organization's survival depends on its ability to conquer the resistance to change in the midst of an unpredictable and fluctuating business environment (Gilbert, 2005). Established companies are particularly susceptible to new competitors entering

their respective market and must overcome this type of challenge, called incumbent inertia (Gilbert, 2005).

G. MOBILE APP DESIGN CONSIDERATIONS

The research results may prove that the app does not fully meet the needs of the end user and may require redesign. If a redesign is necessary, Sandu (2017) provided seven critical steps to follow when creating a mobile application. The following are five of the seven steps.

1. Research

Mobile app design is different from online website design. Users of an app will intuitively begin to understand layouts and develop preferences that best suit their needs (Sandu, 2017). As technology continues to change, understanding the world of innovation in the mobile phone market, will provide a competitive advantage in the development of mobile apps (Sandu, 2017).

2. Checking Out Your Competition

Before making any business decision, it is best to measure your organization with its competition. Within the app industry, numerous apps can be found on both the Apple and Google Play stores, and can be viewed before making a decision. In addition, there are various mediums where thoughts and ideas are expressed about applications (Sandu, 2017). To effectively gauge the market, and before the design process commences, time spent examining some of the different mediums previously mentioned, can provide current industrial trends as well as knowing what users want within an app (Sandu, 2017). Sandu (2017), further stated that designers should analyze different applications and focus on the highlights, but also on the areas where improvements are required; however, it is important to understand that customer's inputs should be considered above all.

3. Get Mobile App Design Inspiration

Many apps are created daily with various new features; the catchphrase "there's an app for that" came about because of the rapid pace of app creation, and with each

iteration, newer content is added (Sandu, 2017). Apps today are extremely advanced; when creating an app, it should be distinctive from others, should be functional, and should be a product that the app community can be appreciative of (Sandu, 2017). To get started, it is best to understand the ever-developing world of smartphones, and the many ways of accomplishing a task while utilizing smartphones; it is best to meditate upon an original idea to bring to the industry (Sandu, 2017).

4. Details Matter

The large items on an app can be seen easily; however, the little items can be overlooked and should be given special attention during the design phase (Sandu, 2017).

a. Mobile App Navigation

The style of an app is very important but should never dominate intuitive use; exploring your application ought to be simple enough where users can easily discover what they are in search of, to completely understand the application (Sandu, 2017).

b. Mobile App Typography

Typography should be considered above all, with regards to app design; users will be incapable of utilizing an app if the font is too difficult to read (Sandu, 2017). With the limited area that designers have to work with when creating or updating applications, it is extremely important that designers dedicate particular attention when trying to maximize the constrained space, without limiting the amount of content within the app (Sandu, 2017).

c. Mobile App Design Color Scheme

Trial and error is important when deciding on the color scheme for a mobile app during the testing phase; the end result should be impeccable, since a busy color scheme could potentially become a distraction toward users (Sandu, 2017). Additionally, designers should ensure that texts are able to be viewed properly with any background of choice (Sandu, 2017).

5. Testing

Testing an application before it is made available to the public is extremely important, and to guarantee the best user experience, testing should be conducted on the devices regularly used by app users (Sandu, 2017). Sandu (2017) further stated that it is extremely important for designers to guarantee that during and after the testing phase, an updated app maintains similar appearance on both older and newer model devices. Finally, an essential part of creating a successful app, is to ensure that all users have the opportunity to experience the full splendor of the app (Sandu, 2017).

H. CONCLUSION

In conclusion, the literature review conducted demonstrates the importance of mobile applications in today's business environment. Mobile applications should be usable with easy navigation, aesthetically appealing, and contain complete information. Applications that implement these considerations contain a relative advantage in the realm of improving information exchange and flow within the business' respective industry. The United States Navy is no different and the importance of eSUPPO in today's Navy should not be underestimated. Therefore, the authors of this study believe that the research conducted is relevant, up-to-date, and will further improve communication and exchange of ideas within the Supply Corps Community.

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III. METHODOLOGY

For a researcher to properly address a problem that they are investigating, incorporating various factors from the study in a clear and articulate manner is the research design that should be taken. This should constitute an outline to aide in collecting, measuring, followed by the analyzation of the information (De Vaus, 2001).

A. RESEARCH DESIGN

There are a few different research design types, such as correlational, descriptive, experimental or qualitative to name a few. A qualitative research design is a proposal, or plan, to conduct social research (Creswell, 2009, p. 5). The research design consists of three important components. The first component is to involve the intersection of philosophy, the second is strategies of inquiry, and the third being specific investigation procedures (Creswell, 2009, p. 5). The approach that the authors took for this project is a social construct to collect and analyze data by utilizing several data-gathering methods to form the basis of assumptions.

The authors selected eSUPPO to identify challenges, if any, in the organization and layout of the application. Based on the application of Tushman and Nadler's Congruence Model (Tushman and Nadler, 1978), following the identification of challenges, the authors will implement additional offerings, if necessary. The four components of structure, tasks, culture and people determine an establishment's level of success as observed in this model. The more elevated this level of congruence, or suitability is, keeping the four previously mentioned elements in mind, the greater the performance of the entity, this case being eSUPPO.

There were two focus group sessions held for an hour each, containing 10-15 Supply Corps Officers. Following the focus group sessions, there was a web-based survey delivered to all Supply Corps Officers assigned to NPS regarding eSUPPO. There were two sets of questions developed to capture data. The questions assisted in analyzing the current version of eSUPPO, based on the inputs provided by the Supply Corps Officers that used it on a regular basis. First, the authors examined the application by

focusing on the capabilities, along with the developer's intent. The authors then gathered inputs from the user-base of eSUPPO, through the collection of thoughts from the Supply Corps Officers assigned to the NPS. By using these inputs, rather than just those of the authors, provided an unbiased collection of ideas of how the app can better meet the needs of the users. To accomplish this task, there were two focus group sessions held, followed by a web-based survey to gather more information for analysis, which will be discussed in Chapter IV. The list of questions addressed in the focus group discussion and survey are listed in sections B and C.

B. PHILOSOPHY

Social construct is described by the Encyclopedia as a naturally occurring concept that is apparent to individuals that acknowledge it; however, it may not embody reality ("Social Constructs," 2008). Researchers use various social interactions to examine how individuals interact within their workplace, which allows the researchers to address the activities and interpret their views on the subject. Through these discussions and surveys, the authors will be able to evaluate the views of Supply Corps Officers based on their thoughts of the currently existing elements within eSUPPO. This inductive approach is important in evaluating eSUPPO for possible updated features and offerings, as it affords the authors an opportunity to analyze data collected, and offer any additional features that could be made available from the research materials and data collected.

C. METHODS OF DATA-GATHERING

There were two data gathering types that were utilized by the authors. The first type was a textual analysis of multiple documents, and visual resources acquired throughout the Navy App Locker and Information Science courses taken while attending NPS.

The second type, were two focus group discussions that were conducted face-to-face with several Supply Corps Officers, as well as a web-based survey that was conducted following the focus group sessions. Focus group sessions were conducted in July and August 2017 in a reserved room at Dudley Knox Library at NPS. The web-based survey was conducted via LimeSurvey within a two-week period in August 2017

receiving inputs from 55 Supply Corps Officers assigned to NPS. The participants offered a wide breadth of information related to eSUPPO, issues related to the deployment and implementation of the application, their views on what they liked and disliked about the current version of the application, and what they felt could be implemented to better improve the application.

There are some restrictions to research designs, including those that are qualitative in nature. The authors of this MBA Project must be mindful of the unconscious aspects of their own personal backgrounds, values, norms and biases. This, however, is certainly not constrained to moral and ethical issues that are relatable to the conduct of interviews and data analyzation. The outcomes and conclusions depend upon the role that researchers take while conducting the study and a departure from impartiality during this study will invalidate and undermine the overall progression of this research, thus making the research insignificant and unacceptable. The authors must also ensure that they remain mindful of the notions of consistency, simplicity and legitimacy. In order to do this, the authors must maintain a reliable, consistent and fair approach throughout the research process and ensure that our results are precise and true the entire time. The authors of this MBA Project are aware of the aforementioned constraints and explanation will be provided should the need occur during the course of this project.

D. RESEARCH APPROACH

The research approach being taken, along with the accompanying processes that will add to the research design, will typically be qualitative, quantitative or mixed. After reviewing the various research approaches, the authors have chosen to take a mixed approach that included quantitative and qualitative approaches. The reason for choosing this type of approach is in view of the fact that eSUPPO is in its first version, and there has been little research conducted on it. Therefore, a mixed approach would be the best option for reviewing in order to gather data from enough Supply Corps Officers while also being able to gain some valuable information as well. Regarding the focus group discussions, the quantitative approach was taken to receive a free, non-attributional and

qualitative information exchange. The qualitative approach is investigative and analytical, and addresses a topic within a certain group of people, this case being eSUPPO among Supply Corps Officers. In this work, the authors chose to address what eSUPPO offers Navy Supply Corps Officers as a whole.

E. FOCUS GROUP QUESTIONS: SESSION ONE

1. What do you think about eSUPPO?
2. How can Personally Identifiable Information (PII) be protected within the app if the inventory, gatekeeper, Supply Corps Directory, etc. is made available?
3. What is utilized most in eSUPPO?
4. What is not effective in eSUPPO?
5. What are some recommendations to improve eSUPPO?
6. Of the items discussed in the focus group, what are the top-ranked items to improve eSUPPO?

F. FOCUS GROUP QUESTIONS: SESSION TWO

1. What do you think about eSUPPO?
2. What do you think about a desktop/web version of eSUPPO?
3. What do you think eSUPPO could improve upon?
4. What do you utilize most in eSUPPO?
5. Of the items discussed in the focus group, what are the top-ranked items to improve eSUPPO?

G. SURVEY QUESTIONS

1. Are you familiar with the eSUPPO app?

2. How often do you utilize the eSUPPO application on your smartphone or tablet device?

3. Do you feel the eSUPPO app meet your needs?

4. How can the eSUPPO app better meet your needs?

5. The following resources are available within the eSUPPO application, please indicate how useful they are to you (where 1 is the least useful, 5 being the most useful, and No answer is NOT useful).

6. Check which of the following you would use if they were incorporated into the app.

7. Would you recommend using the eSUPPO app for Mentorship to Junior Supply Officers for additional mentorship?

8. Would you use an "Announcement" icon to be notified of local Supply Corps events?

9. Would you utilize an “Innovation” icon to suggest better business practices?

10. Which name would you prefer for the app?

11. Is there anything additional that you would like to add that was not asked in the survey?

H. OPPORTUNITIES FOR IMPROVEMENT

There has been some research that has taken place by the Navy to implement and institute applications to improve the day-to-day administration and management by different communities; the E-Divo application is an example of this. Unfortunately for eSUPPO, there are some deficiencies in past literature simply in that there is not a lot to go by, unless reviewing non-DOD literature. Some of these deficiencies will be addressed within recommendations for possible avenues to improve upon or adjust in the Next

Generation of this application. Past researchers on this area have not done much exploration on a specific focus area, in this case the Navy Supply Corps Community, and developed what is essential and has the data to provide details on bettering an application that offers information for its community.

Lastly, as with all applications or community-specific information guides, they must all start somewhere and can continue to improve upon themselves with each additional version. The authors will discuss and explore through research, focus groups and a web-based survey to provide textual data while simultaneously applying and searching for themes within the next chapter.

IV. ANALYSIS

Launched in 2016, eSUPPO is a first-generation app introduced to the Supply Corps Community. eSUPPO is frequently used, and attempts to meet the needs of the end users. It may however, lack functionality and require an update. The results from the focus group sessions and web-based survey will determine if the app is lacking in functionality, and if improvements are required.

A. ESUPPO USABILITY CONSIDERATIONS

The authors of this study determined from Gerber's article titled "10 Usability Considerations for Your Mobile App" that the top five considerations correlated with the research conducted were easy navigation, aesthetics, complete information, quick movement and platform usability. The usability considerations and the ideals identified in innovation diffusion, as described by Rogers' in Chapter II (Diffusion of Innovation, 2016) are important in considering the effectiveness of eSUPPO.

The five factors described by the Diffusion of Innovation (2016), are relative advantage, compatibility, complexity, trialability and observability. Those five factors specifically described in Chapter II of this study were considered during the analysis of the focus group sessions and web-based survey. As a result, if eSUPPO is updated, it may experience a strong relative advantage, while maximizing compatibility since the recommendations identified in this study are provided by end users. As well, the complexity of eSUPPO through trialability and observability needs to be invisible to the end users. The authors of this study believe that the observability and trialability as identified in the focus group sessions and web-based survey will enhance the usability and innovation with eSUPPO improvements.

The willingness to share information is already a big part of the Supply Corps Community. eSUPPO makes it much easier to share information since sharing can be done at any time and from anywhere. Information exchange improvements will further improve the usability and innovation diffusion within eSUPPO. The following analysis of the focus group sessions and web-based survey will attempt to identify the areas of

improvement while considering the usability considerations for mobile applications, and innovation diffusion to maximize the effectiveness of eSUPPO.

B. FOCUS GROUP SESSIONS AND WEB-BASED SURVEY

As described in Chapter III, the authors collected data via two different methods. The first method consisted of two focus group sessions. The focus groups varied between 10-15 Supply Corps Officers, which were also end users of eSUPPO. Each session was an hour long and were both conducted in a closed-classroom environment. The closed-classroom environment facilitated a free, non-attributional and qualitative information exchange. The non-attributional format fostered a candid discussion of eSUPPO with the end users. The focus groups provided the authors of this study a range of perspectives on the usability and the effectiveness of eSUPPO.

The second method of data collection was a quantitative method of research through an online web-based survey, completed by Supply Corps Officers currently attending NPS. The survey consisted of 11 questions, as described in Chapter III. The authors of this study utilized the LimeSurvey software and participants had 10 days to complete the survey. The following sections provide an analysis that was conducted by the authors of this research.

1. Focus Group Session 1

Focus group session 1 consisted of 15 Supply Corps Officers currently attending NPS. The following questions and responses were provided below. Section 3 will assess both focus group sessions.

- **Question 1**: What do you think about eSUPPO?
    - Focus Group Responses:
        - Can it be made available on Laptop/PC?
        - It needs to be web-based so that operational Supply Officers can access while out-to-sea or while in secure spaces that prohibit the use of mobile devices.
        - Can it be downloaded overseas?
        - It needs to be available overseas as easily as it is CONUS.
        - Alerts when new information is available.

        - The need exists to be able to customize push notifications for all functions. Currently filters are customizable for requested "Notifications of Interest" and "Billets".
        - Access to Supply Corps Directory and NKO Monthly billet inventory within eSUPPO.
        - Identification of "Gatekeepers" for highly competitive jobs.

- **Question 2:** How can PII be protected within the app if the inventory, gatekeeper, Supply Corps Directory, etc. is made available?

    - Focus Group Responses:
        - Password Protecting eSUPPO when a user accesses the app.
        - CAC readers for mobile devices.
        - Web-based/Cloud version of eSUPPO that is linked to eSUPPO mobile app will facilitate security.

- **Question 3:** What do you utilize most in eSUPPO?

    - Focus Group Responses:
        - Billet Listing.
        - Flashes.
        - "It's Your" series.
        - OP Monthly.
        - Programs.
        - Supply Corps Newsletter.

- **Question 4:** What is not effective in eSUPPO?

    - Focus Group Responses:
        - What is the intent of eSUPPO?
        - Career Focused and not operationally informative.
        - Needs a facelift.

- **Question 5:** What are some recommendations to improve eSUPPO?

    - Focus Group Responses:
        - Having an "Operational" Icon – to include general POC info, i.e. TYCOMs, Fleet Specific, FLC leads, etc.
        - Supply Corps Association events regionally.
        - Listing of best business practices/lessons learned.

- With the addition of more information, the customization of every aspect of the app would facilitate information exchange.
- "Innovation Corner" icon to provide feedback anonymously to Supply Corps decision-makers.

- **Question 6:** Of the items discussed in the focus group, what are the top-ranked items to improve eSUPPO?

  - Focus Group Responses:
    - #1. Web-based eSUPPO.
    - #2. The need for the Supply Corps Inventory / Point of Contact Information.
    - #3. Custom push notifications / automatic updates.
    - #4. Supply Corps Association Foundation schedule of events available regionally within eSUPPO.
    - #5. Bookmarks and customization.

2. Focus Group Session 2

Focus group session 2 consisted of 10 Supply Corps Officers currently attending NPS. The following questions and responses were provided. Section D will assess both focus group sessions.

- **Question 1:** What do you think about eSUPPO?

  - Focus Group Responses:
    - It is improving, but updates are slow to happen for new instructions, etc.
    - Should there be an enlisted portion?
    - Currently there is too much information as it stands right now.
    - Filters for all aspects of the app is needed.
    - What is the point of eSUPPO? If it is about "Your Career" it should remain simple and it is meeting that need.
    - eSUPPO needs a facelift, it looks old (clunky) and needs to be more visually appealing.
    - If eSUPPO is career focused only, it meets the intent.
    - If eSUPPO is meant to be a one-stop-shop for SC Officers, then it needs filters for all areas.
    - eSUPPO needs to have "push" functionality vice updating only when logging in, also known as "pull" functionality.

- Add a mentor function.
- Ability to gain access to ODC/OSR/PSR.

- **Question 2:** What do you think about a desktop/web version of eSUPPO?

  - Focus Group Responses:
    - Potentially add POC information like DLA, FLC, Prime Vendor information in both the web and app version of eSUPPO.
    - A desktop version would benefit the operational SUPPO due to low bandwidth.
    - Potentially add the ability to find a requisition number to get an updated status "pushed" to your phone and web version to assist with day-to-day operations.
    - Potentially add input variables that can create a query of potential jobs based on completed tours and career goals and the POC or gatekeepers for those jobs.

- **Question 3:** What do you think eSUPPO could improve upon?

  - Focus Group Responses:
    - Add a forum section where lessons learned or best business practices can be discussed.
    - Add more features for interaction with other Junior and Senior Supply Officers – similar to a LinkedIn approach for both web and app based version of eSUPPO.
    - Add an Operational section.
    - Add a Mentoring Icon that can be area specific, input your own variables to be assigned a mentor that best fits your career intentions.
    - Add the Supply Corps Inventory.

- **Question 4:** What do you utilize most in eSUPPO?

  - Focus Group Responses:
    - Billet Listing.
    - Flashes.

- **Question 5:** Of the items discussed in the focus group, what are the top ranked items to improve eSUPPO?

  - Focus Group Responses:
    - #1. Search Function.

- #2. “LinkedIn” type of web and app version of eSUPPO.
- #3. Adding a Mentor portion.
- #4. Supply Corps Association Foundation schedule of events available regionally within eSUPPO.
- #5. Creating a web version of eSUPPO.

C. ANALYSIS OF FOCUS GROUP SESSIONS 1 AND 2

Both focus group sessions discussed a wide range of innovative ideas and recommendations for improvements of eSUPPO. Group session participants strongly agreed that eSUPPO needs improvement with the initial intent not being clearly understood. For instance, the opening question regarding thoughts on eSUPPO, participants questioned the intent during both focus group sessions.

eSUPPO is currently career-centric, but participants identified a need for a broader purpose. Participants of both focus group sessions addressed the need for significant improvements on eSUPPO to include the following items: search function, mentorship, web-based version, POC information and push notifications. Of significant importance, a need for the installation of a “search” function at the home screen of eSUPPO was discussed. If a search function were implemented, the ability to conduct inquiries for specific information would enhance information exchange from Supply Corps decision-makers to the end user.

Part of a successful career for Supply Corps Officers requires a focus in mentorship including multiple mentors from Senior Supply Corps Officers within the Supply Corps Community. As mentorship is important for all Supply Corps Officer’s career initially, a mentor icon needs to be installed on the home screen of eSUPPO. The mentor icon as discussed in both focus group sessions under the presumptions that eSUPPO is a career only app, the ability to connect with Senior Supply Corps Officers and filtered regionally should be a function within eSUPPO.

Furthermore, if eSUPPO was meant to be a one-stop-shop type of app to cover the wide range of Supply Corps Officer functionality, then eSUPPO does require a full update, as discussed in both focus group sessions, in order to keep up with technology and maximize information flow between Supply Corps Officers at every level. Under the

assumption that eSUPPO was meant to be a one-stop-shop application, the need for a web-based version of eSUPPO could be enhanced with a similar format to LinkedIn. LinkedIn synchronizes with the application on a user's mobile device and desktop or laptop computer. LinkedIn is described as "the world's largest professional network with more than 500 million users in more than 200 countries and territories worldwide" (LinkedIn, 2017). LinkedIn's vision is to "Create economic opportunity for every member of the global workforce through the ongoing development of the world's first Economic Graph." And their mission is "simple: connect the world's professionals to make them more productive and successful" (LinkedIn, 2017).

LinkedIn maximizes information flow for the global workforce and inevitably makes professionals more productive and successful. With a format similar to LinkedIn, eSUPPO would be able to add additional functionality as discussed in both focus group sessions, Point of Contact information like the Supply Corps Directory, Gatekeeper information for competitive job assignments or Senior Supply Corps Mentors. Additional Point of Contact information that would maximize information flow, identified in both focus group sessions, included operational information specific to each region such as FLC's, Regional Logistics experts, lessons learned and group chat forums.

One of the top complaints regarding eSUPPO was that in order to update the app, the user has to log into the app at which point eSUPPO begins to update information. This is a "pull" type of update where the user logs in and "pulls" the information upon logging in. Further research will be required on the future implementations or Next Generation of eSUPPO, the idea of updating eSUPPO to a "push" or automatic type of update vice the "pull" type was identified as a need for improvement, and was one of the top five ideas that the majority voted on during both focus group sessions.

While the identity of eSUPPO has yet to be clearly defined, ideas of a career-focused application with a one-stop-shop version of eSUPPO and a clear desire for improvement was discussed at length in both focus group sessions. The current version of eSUPPO is functional and based on the discussions in the focus group sessions conducted by the authors of this study, revealed that there is significant room for improvement based on the intent of eSUPPO. The following sections will statistically analyze the

results of the web-based and anonymous survey. Final recommendations will be identified in Chapter V based on the statistical data below and the focus group sessions discussed previously.

D. STATISTICAL ACCURACY

Fifty-five of the 80 Supply Corps Officers attending NPS completed the online survey. The margin of error for 55 participants is approximately between 10-14%. Ideal sample sizes range from 200 and greater number of participants. The margin of error for 200 to 10,000 participants is 7% to 1%, respectively. To determine effectiveness of a survey, the margin of error needs to be determined. The following table utilizes the $1/\sqrt{N}$ and is a sufficient approach to analyzing the sample size contained at NPS.

Sample Size	$1/\sqrt{N}$	Margin of Error (%)
10	0.31622	31.6%
20	0.22361	22.4%
30	0.18257	18.3%
40	0.15811	15.8%
50	0.14142	14.1%
55	0.13484	13.5%
100	0.1	10.0%
200	0.07071	7.1%
500	0.04472	4.5%
1000	0.03162	3.2%
2000	0.02236	2.2%
5000	0.01414	1.4%
10000	0.01	1.0%

Figure 2. Sample Size Margin of Error.

In order to validate the statistical confidence of the sample size, the authors of this study computed an ideal sample size from a standard confidence level of 95% (or a confidence level score of 1.96), NPS population size (80), and a margin of error (13.484%). The following calculation concluded that the ideal sample size from the NPS population given a 95% confidence level and margin of error of 13.484% was 33.

Furthermore, by increasing the confidence level to 99%, with no change to the margin of error or population, the ideal sample size is 43.

$$Sample\ Size = \frac{\left(.5 * (1 - .5)\right)}{((margin\ of\ error\ \div confidence\ level\ score\ )^2)}$$

Figure 3. Computation of an Ideal Sample Size.
Adapted from Fluid Surveys Team (2014).

A confidence level of 95% that resulted in an ideal sample size of 33 and 99% confidence level resulted in an ideal sample size of 43 demonstrated that the participation of 55 out of 80 exceeded the ideal sample size requirements. With a margin of error of 13.5%, the exceeding of an ideal sample size and the confidence level of 99%, the data gathered and analyzed below justifies the quantitative method of research findings. Furthermore, the Supply Corps Officer population surveyed at NPS, would most likely mirror the larger Navy Supply Corps population.

E. WEB-BASED SURVEY ANALYSIS

The web-based survey consisted of 11 questions. The first three questions created by the authors of this study, identified the end user's familiarity and usage of eSUPPO. The following data on Questions 1-3 are provided:

1. Are you familiar with the eSUPPO app?		
Answer	Count	Percentage
Yes (Y)	54	98.18%
No (N)	0	0.00%
No answer	1	1.82%

Figure 4. Web-Based Survey Question 1 Results.

2. How often do you utilize the eSUPPO application on your smart phone or tablet device?		
Answer	Count	Percentage
Never (A1)	1	1.82%
Rarely (A2)	9	16.36%
Often (A3)	17	30.91%
Somewhat Often (A4)	14	25.45%
Very Often (A5)	12	21.82%
No answer	2	3.64%

Figure 5. Web-Based Survey Question 2 Results.

3. Do you feel that the eSUPPO app meets your needs?		
Answer	Count	Percentage
Yes (Y)	35	63.64%
No (N)	15	27.27%
No answer	5	9.09%

Figure 6. Web-Based Survey Question 3 Results.

Questions 1-3 as shown in Figures 4-6, provided a familiarity and usage baseline for eSUPPO end users. 98% of the web-based survey participants acknowledged familiarity with eSUPPO based on Question 1 results. Question 2 revealed that 18% of participants rarely and never (A1-A2) use eSUPPO, while 67% use eSUPPO often to very often (A3-A5). Question 3 revealed that 64% of participants believed that eSUPPO meets their needs. However, the results as shown in Figure 6 revealed that 27% of participant's needs are not being met.

Question 4 was an opportunity for participants of the web-based survey to provide candid and retribution-free feedback on how eSUPPO can better serve the Supply Corps Officer Community.

4. How can the eSUPPO app better meet your needs? Please Explain:		
Answer	39	70.91%
No answer	16	29.09%

Figure 7. Web-Based Survey Question 4 Results.

The results from Question 4 in Figure 7 revealed that 71% of participants believed that eSUPPO can be improved. Conversely, 29% suggested that eSUPPO does in fact meet the needs of Supply Corps Officers. Based on candid, documented feedback from 39 of 55 responses received from Question 4, the following 6 categories identified in Figure 8, were created in order to quantify the written responses:

Category	# of Responses	Total Responses	Percentage
Point Of Contact Info	20	39	51.28%
Innovation Icon	1	39	2.56%
Push/Automatic Notifications	5	39	12.82%
Operational need for web access	2	39	5.13%
Search Function	1	39	2.56%
Complaints	6	39	15.38%
Other	4	39	10.26%

Figure 8. Web-Based Survey Question 4 Qualitative Responses.

Of the 39 responses received, more than half of the participants (51%), suggested that more POC information should be made available in eSUPPO. Comments like "Operational, Regional and Fleet Logistics Center" points of contact should be integrated into eSUPPO. The next highest percentage (13%) suggested that eSUPPO would be more effective with automated or push notifications, vice logging into eSUPPO for updates. The next closest percentage of responses were either complaints (15%) or other non-applicable responses (10%). Three additional suggestions came out of the written

responses with low percentages. The Innovation Icon with 2.56%, Operational Need for Web Access with 5.13%, and a Search Function with 2.56%, correlated with what was discussed during Focus Group sessions. The authors of this study believed that from focus group sessions and the written recommendations in Figure 8, the addition of an operational icon, web-based access and a search function, would enhance eSUPPO.

Question 5 asked: "The following resources are available within the eSUPPO application, please indicate how useful they are to you (where 1 is the least useful, 5 is the most useful and No answer is not useful). The above question was asked regarding 6 categories to include Billet Listing, It's Your Career, News, Programs, Ethics and Connect icons within eSUPPO. Figures 10–14 show the usefulness of the categories.

Answer	Count	Percentage	Sum
1 (1)	1	1.85%	1.85%
2 (2)	0	0.00%	
3 (3)	1	1.85%	1.85%
4 (4)	5	9.26%	
5 (5)	47	87.04%	87.04%
Sum (Answers)	54	100.00%	100.00%
Number of cases	55	100.00%	
No answer	1	1.82%	
Arithmetic mean	4.8		
Standard deviation	0.66		

Figure 9. Web-Based Survey Question 5 Ranking for Billet Listing.

Answer	Count	Percentage	Sum
1 (1)	3	5.77%	5.77%
2 (2)	1	1.92%	
3 (3)	12	23.08%	23.08%
4 (4)	21	40.38%	
5 (5)	15	28.85%	28.85%
Sum (Answers)	52	100.00%	100.00%
Number of cases	55	100.00%	
No answer	3	5.45%	
Arithmetic mean	3.85		
Standard deviation	1.06		

Figure 10. Web-Based Survey Question 5 Ranking for It's Your Career.

Answer	Count	Percentage	Sum
1 (1)	2	3.92%	3.92%
2 (2)	3	5.88%	
3 (3)	10	19.61%	19.61%
4 (4)	20	39.22%	
5 (5)	16	31.37%	31.37%
Sum (Answers)	51	100.00%	100.00%
Number of cases	55	100.00%	
No answer	4	7.27%	
Arithmetic mean	3.88		
Standard deviation	1.05		

Figure 11. Web-Based Survey Question 5 Ranking for News.

Answer	Count	Percentage	Sum
1 (1)	3	6.00%	6.00%
2 (2)	8	16.00%	
3 (3)	18	36.00%	36.00%
4 (4)	11	22.00%	
5 (5)	10	20.00%	20.00%
Sum (Answers)	50	100.00%	100.00%
Number of cases	55	100.00%	
No answer	5	9.09%	
Arithmetic mean	3.34		
Standard deviation	1.15		

Figure 12. Web-Based Survey Question 5 Ranking for Programs.

Answer	Count	Percentage	Sum
1 (1)	8	17.02%	17.02%
2 (2)	12	25.53%	
3 (3)	12	25.53%	25.53%
4 (4)	10	21.28%	
5 (5)	5	10.64%	10.64%
Sum (Answers)	47	100.00%	100.00%
Number of cases	55	100.00%	
No answer	8	14.55%	
Arithmetic mean	2.83		
Standard deviation	1.26		

Figure 13. Web-Based Survey Question 5 Ranking for Ethics.

Answer	Count	Percentage	Sum
1 (1)	8	17.02%	17.02%
2 (2)	12	25.53%	
3 (3)	12	25.53%	25.53%
4 (4)	10	21.28%	
5 (5)	5	10.64%	10.64%
Sum (Answers)	47	100.00%	100.00%
Number of cases	55	100.00%	
No answer	8	14.55%	
Arithmetic mean	2.83		
Standard deviation	1.26		

Figure 14. Web-Based Survey Question 5 Ranking for Connect.

Based on the results in Figures 10-14, the Billet Listing icon in eSUPPO received 87% of 5's (most useful), suggesting that the Billet Listing is the most utilized resource in eSUPPO. It's Your Career and News icons received the second highest percentages, with a 69%, and 71% of 4's and 5's, respectively. The Programs icon was more evenly distributed in that approximately half of the users found it useful, and the other half did not. Connect and Ethics resources had a similar distribution as the Programs resource in eSUPPO. The resources considered not useful by the sample size, suggested that eSUPPO is operating at a level below optimal and thus could be inferred that eSUPPO needs improvement.

The results from Questions 4 and 5 (Figures 7-14) suggested that eSUPPO is not operating effectively. The authors of this study utilized Question 6 to suggest four new icons to potentially improve eSUPPO. The statistical distribution in Figure 15 shows these results.

6. Check which of the following you would use if they were incorporated into the app.		
Answer	Count	Percentage
Search Function (SQ001)	32	58.18%
Mentorship (SQ002)	25	45.45%
Worldwide Navy Logistics Points of Contact (POC) (SQ003)	46	83.64%
Innovative Ideas Suggestion (SQ004)	21	38.18%

Figure 15. Web-Based Survey Question 6 Results.

Of the icons recommended in Question 6 (Figure 15), participants were able to select multiple, all or none from the four categories. Points of Contact and the Search function option were the top two options at 84% and 58% respectively. Mentorship and an Innovative Ideas Suggestion options were lower at 45% and 38% respectively. The results indicated that the majority of users would find all four of the options suggested by the authors of this study to effectively improve eSUPPO.

Question 7 (Figure 16) provided participants the opportunity to vote on a mentor option in eSUPPO. The following distribution shows a clear vote of 72% in favor of adding a mentor option for Junior Supply Officers.

7. Would you recommend using the eSUPPO app for Mentorship to Junior Supply Officers for additional mentorship?		
Answer	Count	Percentage
Yes (Y)	40	72.73%
No (N)	10	18.18%
No answer	5	9.09%

Figure 16. Web-Based Survey Question 7 Results.

Question 8 (Figure 17) gave participants the opportunity to vote on an Announcement icon that would notify users of Supply Corps events coordinated by regional Supply Corps Associations. An 85% vote in favor of an Announcement icon in eSUPPO, suggested a need for additional communication to make eSUPPO more effective.

8. Would you use an "Announcement" icon to be notified of local Supply Corps events?		
Answer	Count	Percentage
Yes (Y)	47	85.45%
No (N)	6	10.91%
No answer	2	3.64%

Figure 17. Web-Based Survey Question 8 Results.

Question 9 (Figure 18) was an attempt to suggest an Innovation icon to be added within eSUPPO. 55% in favor suggested that the majority of the participants would utilize the Innovation icon if implemented.

9. Would you utilize an "Innovation" icon to suggest better business practices?		
Answer	Count	Percentage
Yes (Y)	30	54.55%
No (N)	18	32.73%
No answer	7	12.73%

Figure 18. Web-Based Survey Question 9 Results.

Question 10 (Figure 19) was an opportunity for participants to offer recommendations to potentially change the name of eSUPPO. The authors of this study suggested options in Question 10 (Figure 19).

10. Which name would you prefer for the app?		
Answer	Count	Percentage
Remain Unchanged (eSUPPO) (SQ001)	43	78.18%
SUPPO (SQ002)	8	14.55%
CHOP (SQ003)	1	1.82%
Oakleaf (SQ004)	5	9.09%
Pork Chop (SQ005)	0	0.00%
Other (SQ006)	1	1.82%

Figure 19. Web-Based Survey Question 10 Results.

Keeping eSUPPO as the name of the application received the majority vote of 78%. The next highest votes were for SUPPO with 15% and Oakleaf at 9% respectively. Chop, Porkchop and Other received a combined 4% of the votes.

The last question of the study (Figures 20–21) allowed the participants of the web-based survey to provide additional comments. The following responses were similar recommendations to Question 4 (Figures 7-8). The following responses in Figures 20–21, and throughout the web-based survey, reinforced the ideas discussed in the focus group sessions and further demonstrated a need to improve eSUPPO.

11. Is there anything additional that you would like to add that was not asked in the survey?		
Answer	25	45.45%
No answer	30	54.55%

Figure 20. Web-Based Survey Question 11 Responses.

Category	# of Responses	Total Responses	Percentage
Point Of Contact Info	4	25	16.00%
Innovation Icon	2	25	8.00%
Push/Automatic Notifications	0	25	0.00%
Operational need for web access	3	25	12.00%
Search Function	3	25	12.00%
Complaints	5	25	20.00%
Other	8	25	32.00%

Figure 21. Web-Based Survey Question 11 Qualitative Responses.

The "Other" category with 32% of responses included comments like "n/a," "not at this time," or "nothing." Out of the 55 potential responses, 25 of those responses were dominated by complaints at 20% with comments like "update the app now!" or "the app needs a clear intent in order to determine whether or not it is meeting the needs of the users." Additional complaints that the app seems "bureaucratic" and does not meet the need of the operational Supply Corps Officer, provides further evidence that eSUPPO needs improvement. The next closest category of responses at 16%, suggested that eSUPPO needs additional POC information.

With a statistical accuracy of 95% (+ or – 2% to 3%), if a web-based survey was given to the larger population of Supply Corps Officers throughout the United States Navy, the end result would likely mirror the results of the sample size of participants (55 of 80) that completed the survey at NPS. The authors of this study identified recommendations from the responses of end users of eSUPPO from both the web-based survey and the focus group sessions. The results analyzed, suggested eSUPPO is not operating at its intended capacity and needs improvement. The message throughout the focus group sessions, and the web-based survey revealed that eSUPPO could better meet the needs of end users with options like POC, Announcements, Innovation and Mentorship options. Those additions, coupled with push or automated updates, and a search function within eSUPPO, would maximize information flow for the Supply Corps Community as a whole.

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V. RESULTS AND CONCLUSION

After conducting detailed analysis of the results from both the web-based survey and focus group sessions, the results showed that eSUPPO does not fully meet the needs of the end users. The items that were discussed in the focus group sessions were correlated quantitatively by the web-based survey, identifying the need to update eSUPPO with specific icons such as Innovation, Operational, Mentoring and Announcements. Furthermore, both methods of research identified the need for push notifications as well as a search function. A mobile application's development and successful longevity depends on usability. The three top items to further enhance usability are push notifications, search functionality and the swipe right capability within eSUPPO.

A. RECOMMENDATIONS

The authors of this study conducted research to improve the aesthetics of eSUPPO. While no specific data was collected from the web-based survey or focus group sessions regarding a facelift design, the following recommendations created a guide for the improvement of eSUPPO. In order to explain in detail, the effectiveness of the guide proposed, the authors believe that starting with a visual reference for the implementation of the overall flow of the Next Generation of eSUPPO. Figure 22 is the current As-Is version of eSUPPO.

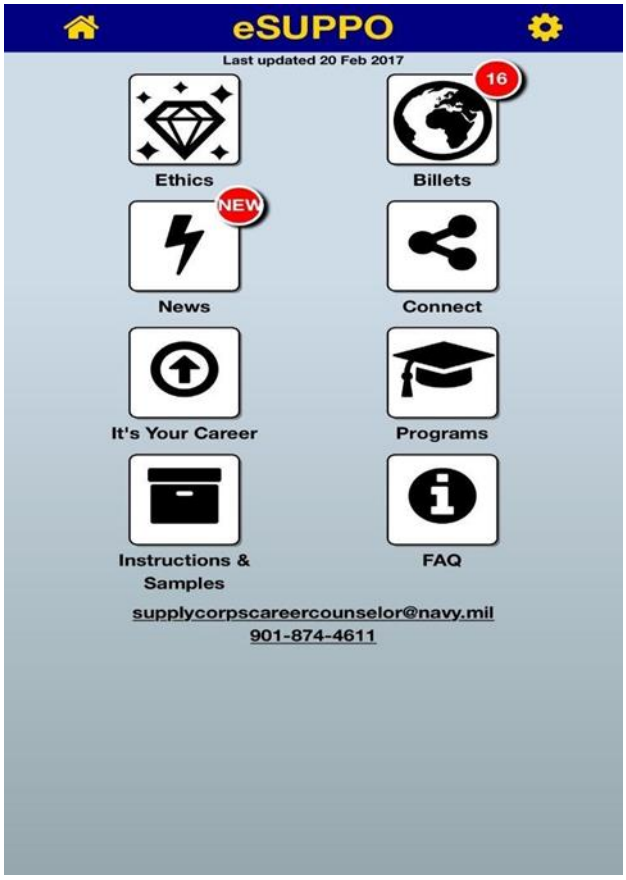

Figure 22. eSUPPO Mobile App (As-Is). Source: iTunes (2016).

The six icons in Figure 22, will remain on the main screen, but four additional recommended icons will be added to better meet the needs of the end users. The following are the recommended changes for eSUPPO.

1. Facelift for eSUPPO.

The authors of this study recommend, based on feedback from the focus group sessions, that the main screen of eSUPPO should be updated. Modern and professional apps display an arrangement of icons on the home screen that create the best user experience. What meets the eye whenever eSUPPO is opened, could be displayed in a different order. A home screen with a better layout, more appealing colors, and the icons used most, would better meet the needs of the users.

The commercial app that the authors researched and used as the model for the Next Generation of eSUPPO was the MyHealth mobile application by Stanford Healthcare. The MyHealth mobile application provides the capability of healthcare information tracking, so that patients are able to closely follow their healthcare record online with the use of the app (Beasley, 2015). Beasley (2015), further stated that patients can schedule appointments, receive consultations, communicate with the staff at Stanford along with various other options. Figures 23 and 24, are examples of the MyHealth Stanford Healthcare Mobile application.

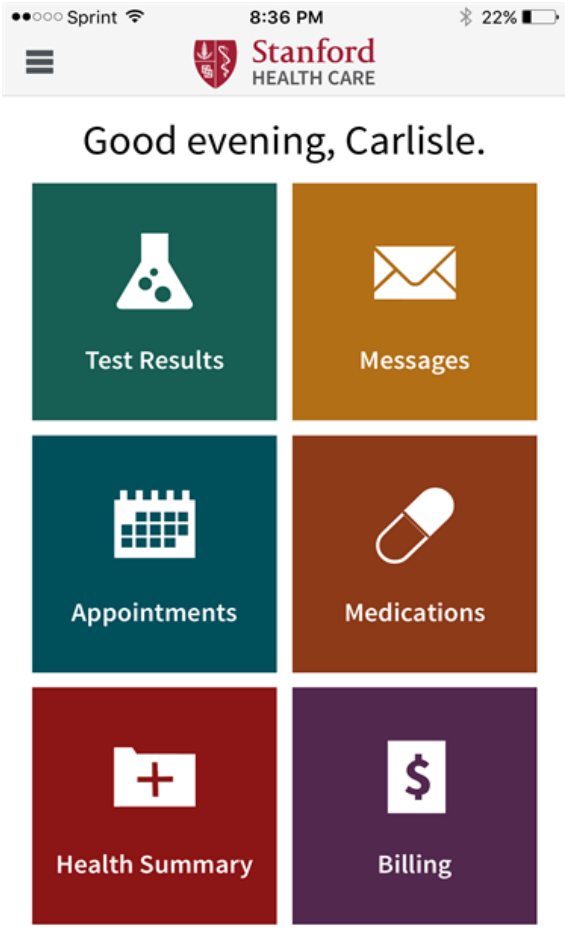

Figure 23. MyHealth Stanford Healthcare Mobile App 1.
Source: iTunes (2017).

The large, colorful icons in Figure 23, make the app easy to read, while potentially improving usability. The authors of this study believe that larger icons, if implemented into eSUPPO, would potentially yield similar results.

In Figure 24, the MyHealth app is designed with the swipe to the right option from the main screen. After a swipe to the right, the subsequent information is viewable on the left in a list-view format. This option is important since the user can select from the list view, without having to go back to the main screen to select a different icon. Having that option available saves time and improves the overall usability of the app. The authors of this study believe that if implemented within eSUPPO, usability will inevitably improve.

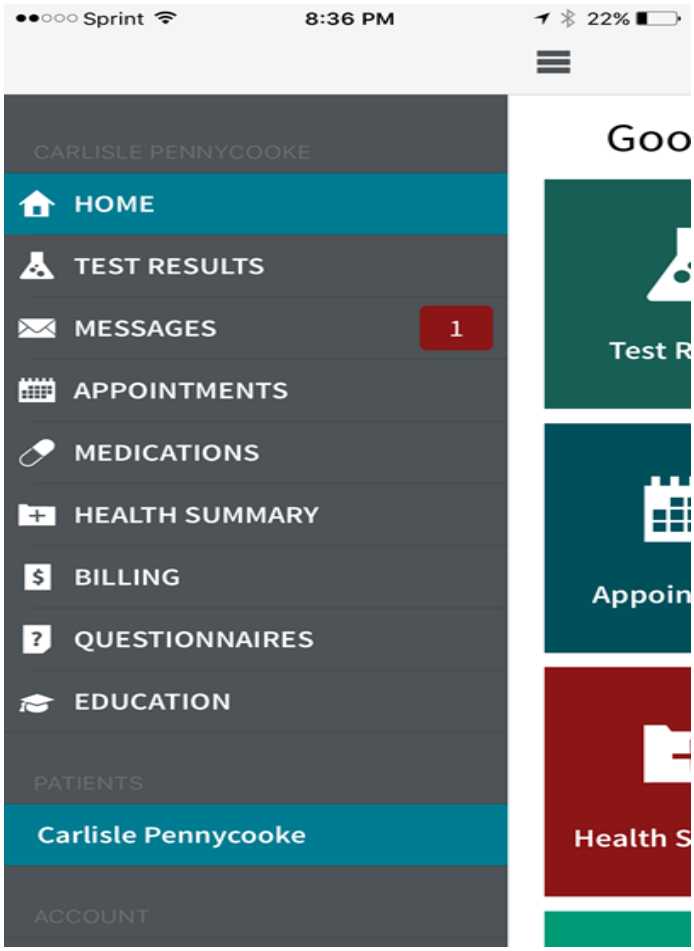

Figure 24. MyHealth Stanford Healthcare Mobile App 2.
Source: iTunes (2017).

Figures 25 and 26, are examples of the proposed updated version of eSUPPO. Following the example from the Stanford MyHealth app, the authors took a similar approach to for the recommended facelift for eSUPPO.

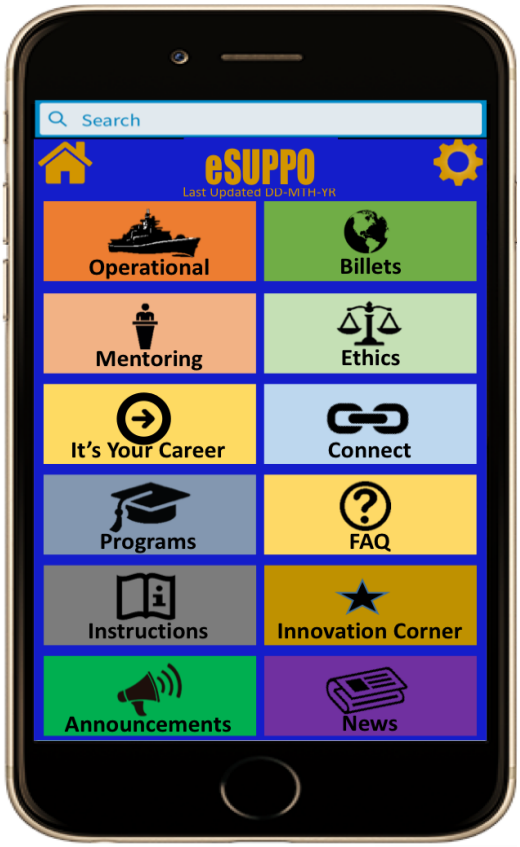

Figure 25. Proposed eSUPPO App Home Display Screen (To-Be).

Figure 26, shows an updated Billets screen selected from the main screen. Figure 27 demonstrates the swipe right option from the Billets screen, that reveals the list-view of the main screen options on the left.

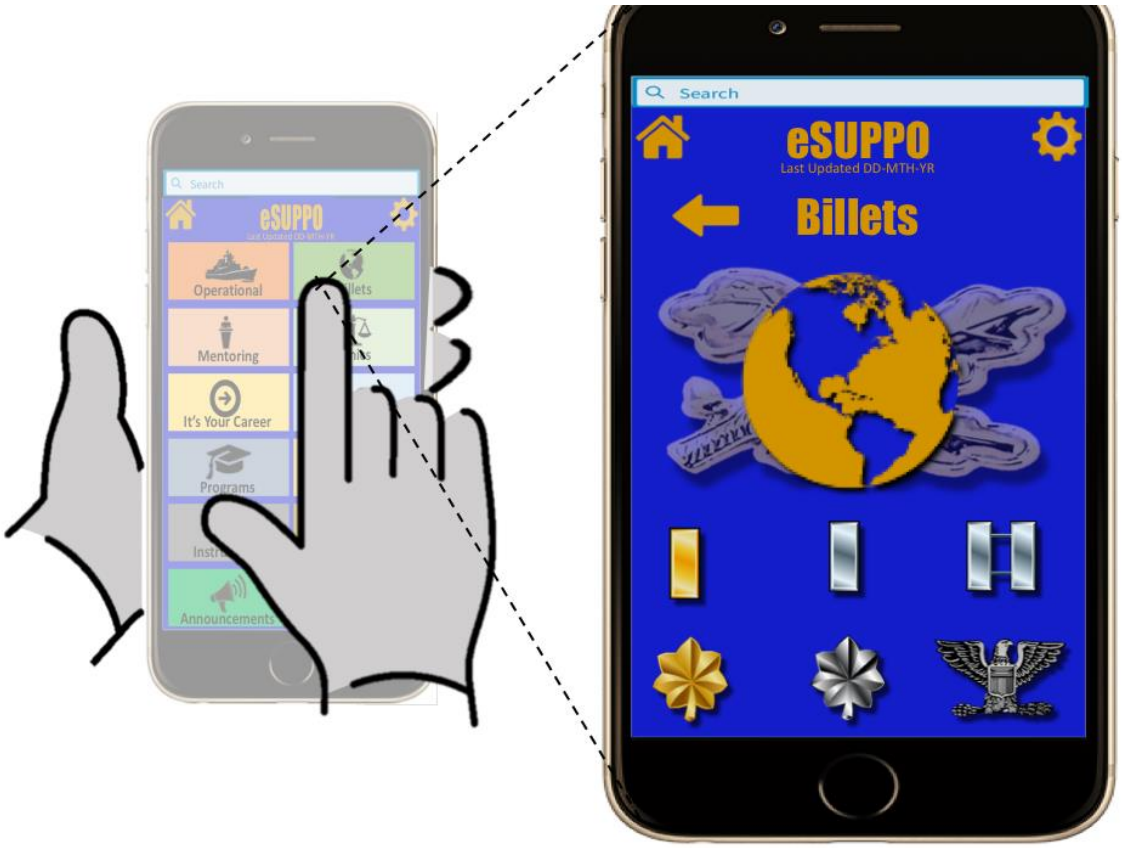

Figure 26. Proposed eSUPPO App Changes (To-Be).

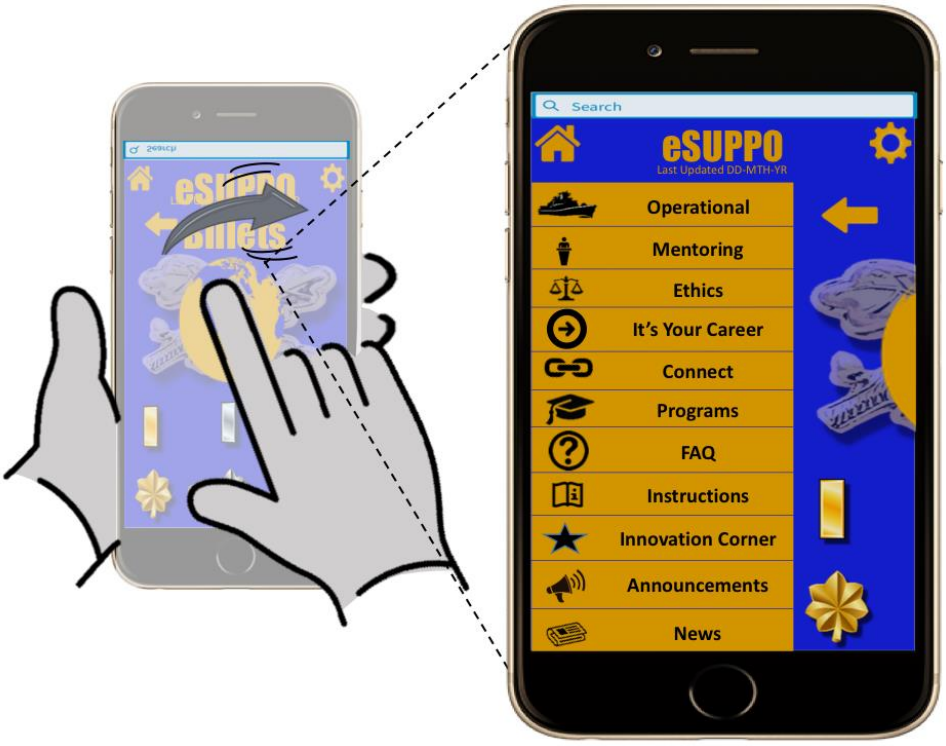

Figure 27. Additional Proposed Changes to eSUPPO App (To-Be).

The swipe right option, as demonstrated in Figure 27, allows the user to select from the main screen options within the Billets screen. If the swipe right option is implemented, the authors of this study believe it will improve the usability of eSUPPO.

2. Innovation Corner Icon

Shark Tank, a business themed reality show within the United States, has revived entrepreneurship. Business concepts are presented to a team of investors by helpful entrepreneurs, and after the presentation is complete, the investors decide on the feasibility of the plan and if they should invest or not (American Broadcasting Company, n.d).

A Shark Tank board for innovative ideas within the Supply Corps Community could work in a similar manner. Innovative ideas can be found throughout the Supply Corps Community. Many ideas are not brought forward because a direct channel to the decision makers does not exist within the Supply Corps Community. Additionally,

innovative ideas are discounted when presented to the local chains of command, and those ideas are rarely forwarded to Supply Corps decision makers for potential implementation. Based on the data correlated from the web-based survey with what was discussed in the focus group sessions, an Innovation icon would facilitate the flow of ideas. Figure 28, is the proposed Innovation icon for the updated version of eSUPPO.

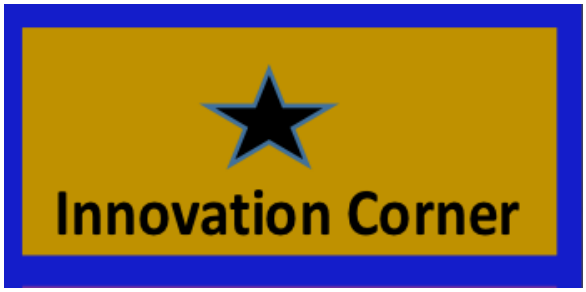

Figure 28. Suggested Innovation Corner Icon.

By utilizing the Innovation icon, eSUPPO users will have the opportunity to submit a potential groundbreaking idea immediately. When a user selects the Innovation icon, a textbox will appear with a 150-character limit to submit the innovative idea. If further description is required for the submitted idea, users will have the opportunity to submit via email to a group email address.

The ideas submitted will be received and reviewed by an Innovation board on a monthly basis. As an example, a proposed Innovation board would be chaired by the Commanding Officer of NAVSUP BSC and the makeup of additional members would be at his or her discretion. Listed in Figure 29 is a potential makeup of a generic Innovation board.

Proposed Innovation Team Board Members	
NAVSUP BSC CO	Chairman
NAVSUP (N06)	Board Member
NAVSUP CMDCM	Board Member
CDR Supply Corps	Board Member
LCDR Supply Corps	Board Member

Figure 29. Proposed Innovation Team.

The Commanding Officer of NAVSUP BSC will meet with the current Innovation Cell at NAVSUP Headquarters and present the results of the innovation board for that month. If an idea is submitted, and that idea would be a better fit for another community or branch of service, then it is the responsibility of innovation team to make every effort to forward that idea to the correct office.

3. Operational Icon

The participants in the web-based survey and focus group sessions, acknowledged with an 84% response rate, the need to add worldwide points of contact for the Operational Supply Corps Officer within eSUPPO. The Connect Icon has limited Point of Contact information in eSUPPO. The authors of this study believed that separating the Operational information into its own icon would improve information accessibility. The Operational icon in Figure 30, is what the authors of this study designed in order to support information flow throughout the Supply Corps Officer operational communities. Supply Corps Officers operating overseas sometimes contact a shore-based facility in order to make a quick and informed decision. Having specific operational POCs with a one-click option within eSUPPO will assist greatly with decision-making processes.

Figure 30. Suggested Operational Icon.

A display of the Operational Icon (Figure 30) on the main screen, will enable users of eSUPPO to find the correct regional subject matter experts. As an example, there are eight NAVSUP FLC's strategically positioned around the globe. Supply Corps Officer's operating in the Persian Gulf will be an Operational Icon click away from finding the appropriate Operational POC. Figure 31, shows the exact locations for all the major FLC's around the globe which are the Operational Supply Corps Officer's first line of defense in getting the needed information to ensure success.

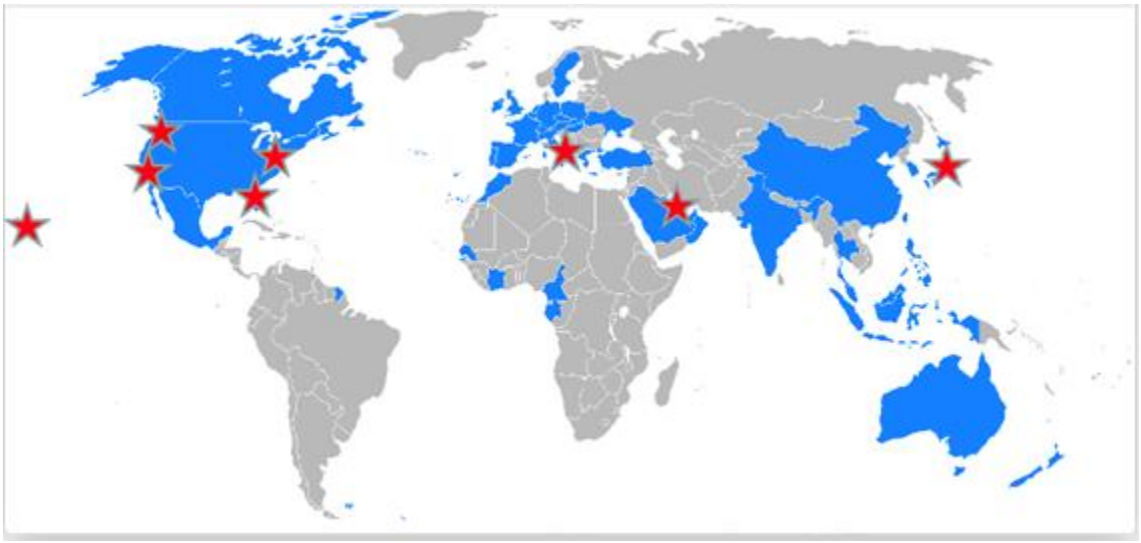

Figure 31. Worldwide Major NAVSUP FLC Locations. Adapted from Open Clip Art (n.d.).

The Operational Icon will also include POC information for Aviation, Expeditionary and Submarine Support to provide users with quick and easy access whenever needed. Having eSUPPO readily available with all the necessary operational information, can be extremely helpful for Supply Corps Officers who may need support. In Figures 32, 33 and 34, are the recommended changes for the Operational section within eSUPPO.

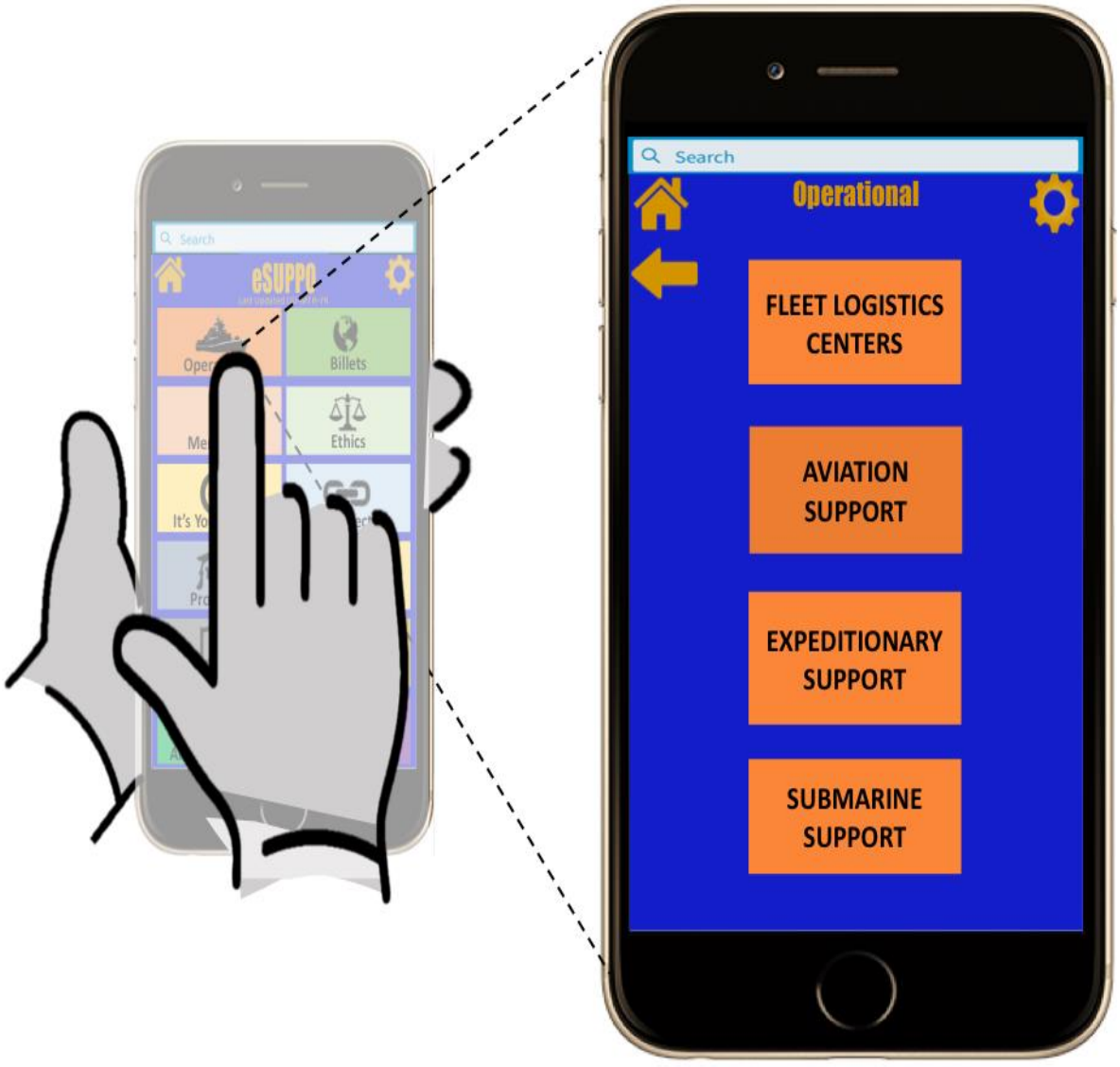

Figure 32. eSUPPO App Proposed Changes Operational 1.

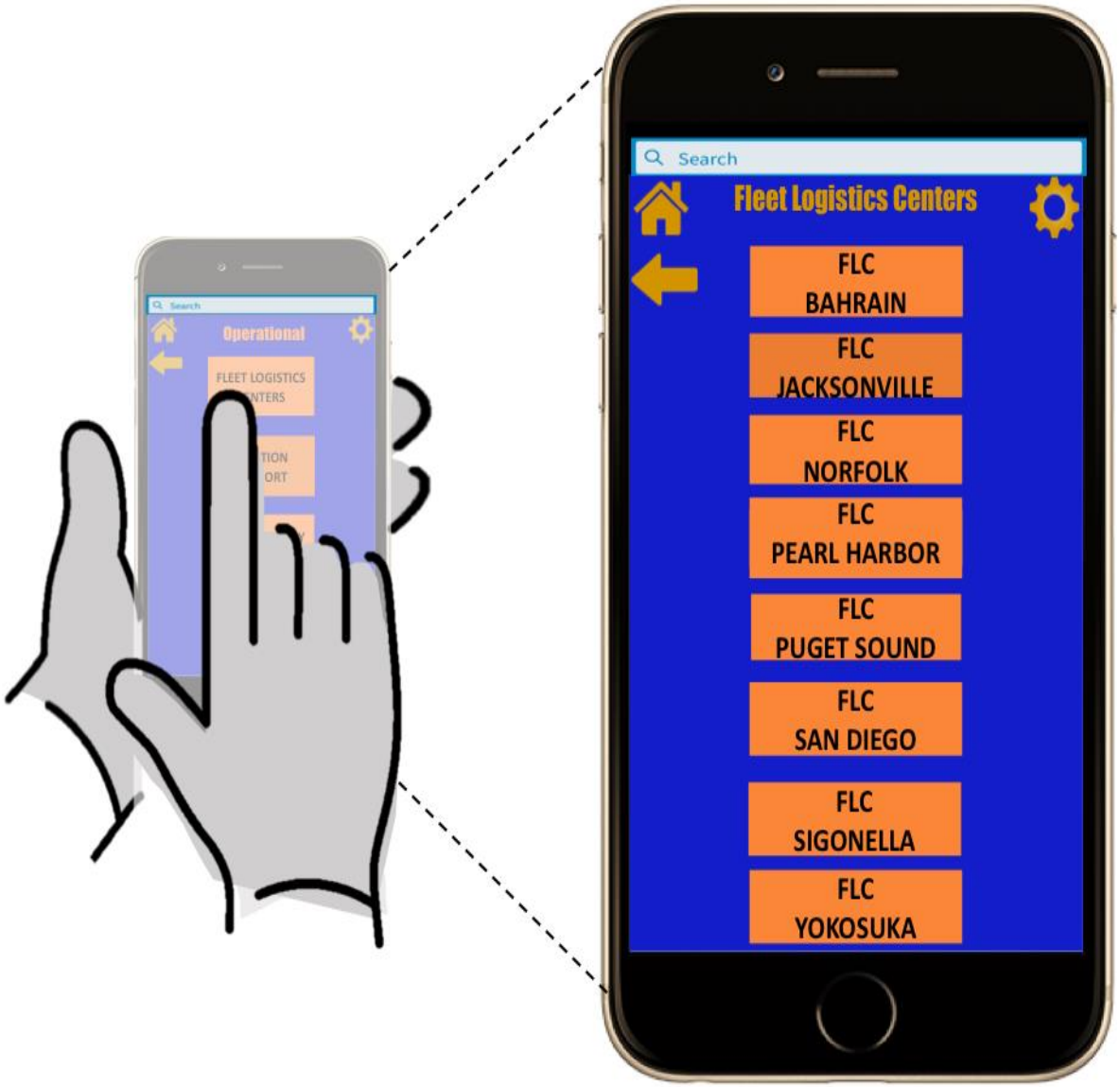

Figure 33. eSUPPO App Proposed Changes Operational 2.

The phone numbers and email addresses listed in Figure 34 were retrieved from the Navy Supply Systems Command website (NAVSUP, 2017).

Figure 34. eSUPPO App Proposed Changes Operational 3.

4. Mentoring Icon

One of the main ideas raised by participants in the focus group sessions and web-based survey, was Mentoring. Mentoring is extremely important to career growth of Supply Corps Officers, and many participants mentioned that the mentoring program within the Supply Corps has not met their expectations. The authors are proposing a Mentoring icon (Figure 35) which, if implemented, will cover fleet concentration areas. The Commanding Officer of each FLC will be overall responsible for the program in their region. The program would be open to all Supply Corps Officers, with special

emphasis placed on first tour division officers. Figure 35 is an example of the suggested Mentoring icon.

Figure 35. Suggested Mentoring Icon.

The approach that the Supply Corps took in regards to a mentoring program in years past, was to assign each Supply Corps Officer a mentor upon completion of the Supply Corps Basic Qualification Course. The mentor, normally a Captain, may or may not have been stationed in the same area as his or her mentee. Figure 36 is an example of a mentoring flowchart.

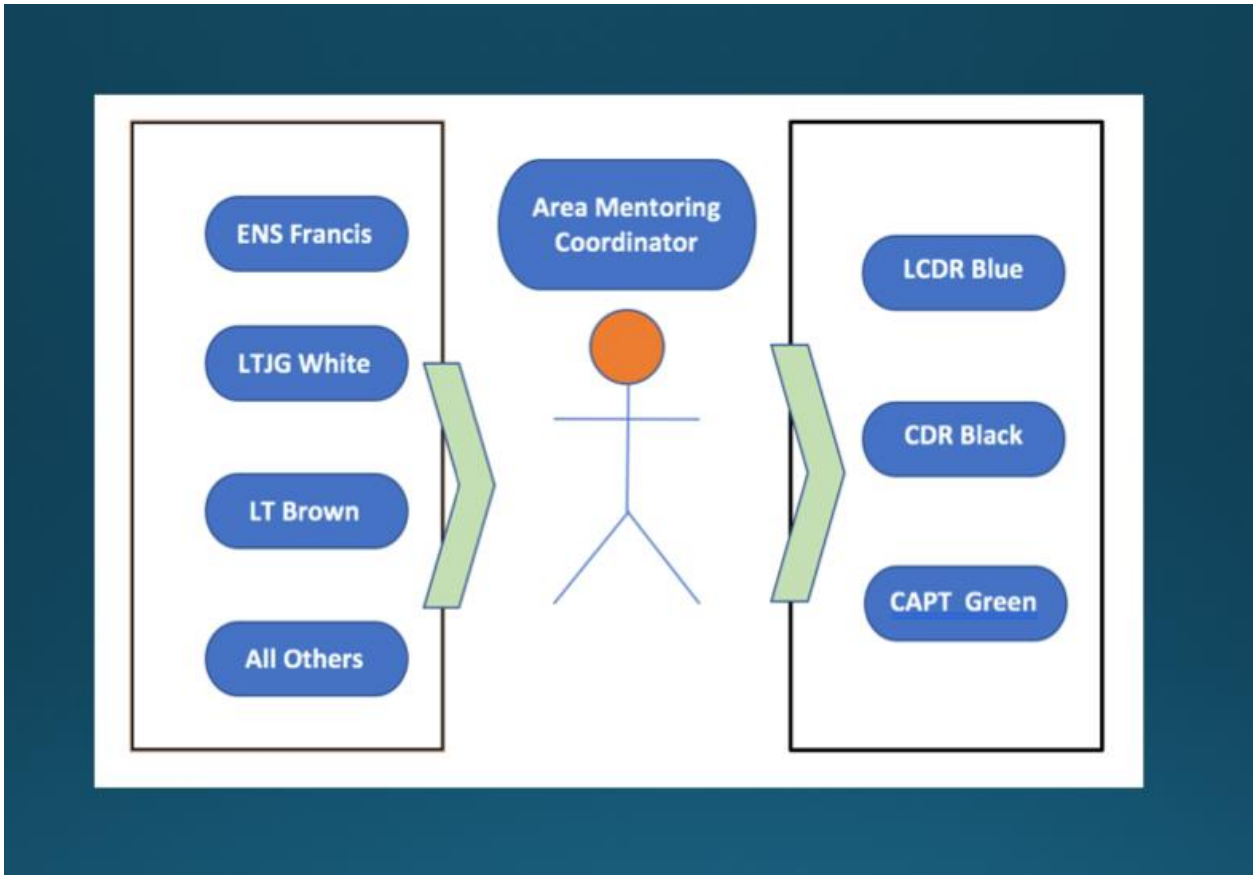

Figure 36. Proposed Mentoring Flowchart.

A mentor coordinator will be assigned by their regional FLC Commanding Officer as shown in Figure 36, with their direct generic contact information listed within the Mentoring section of eSUPPO. Once the coordinator receives the information from the Supply Corps Officer requesting a mentor, the coordinator will then create a mentoring match with a senior Supply Corps Officer. The Mentoring Program progress reports will be provided to the regional FLC Commanding Officer, who will then forward a report to the Chief of Supply Corps on a monthly basis. Figure 37 shows how users will be able to contact the mentoring coordinator within the different fleet concentration areas.

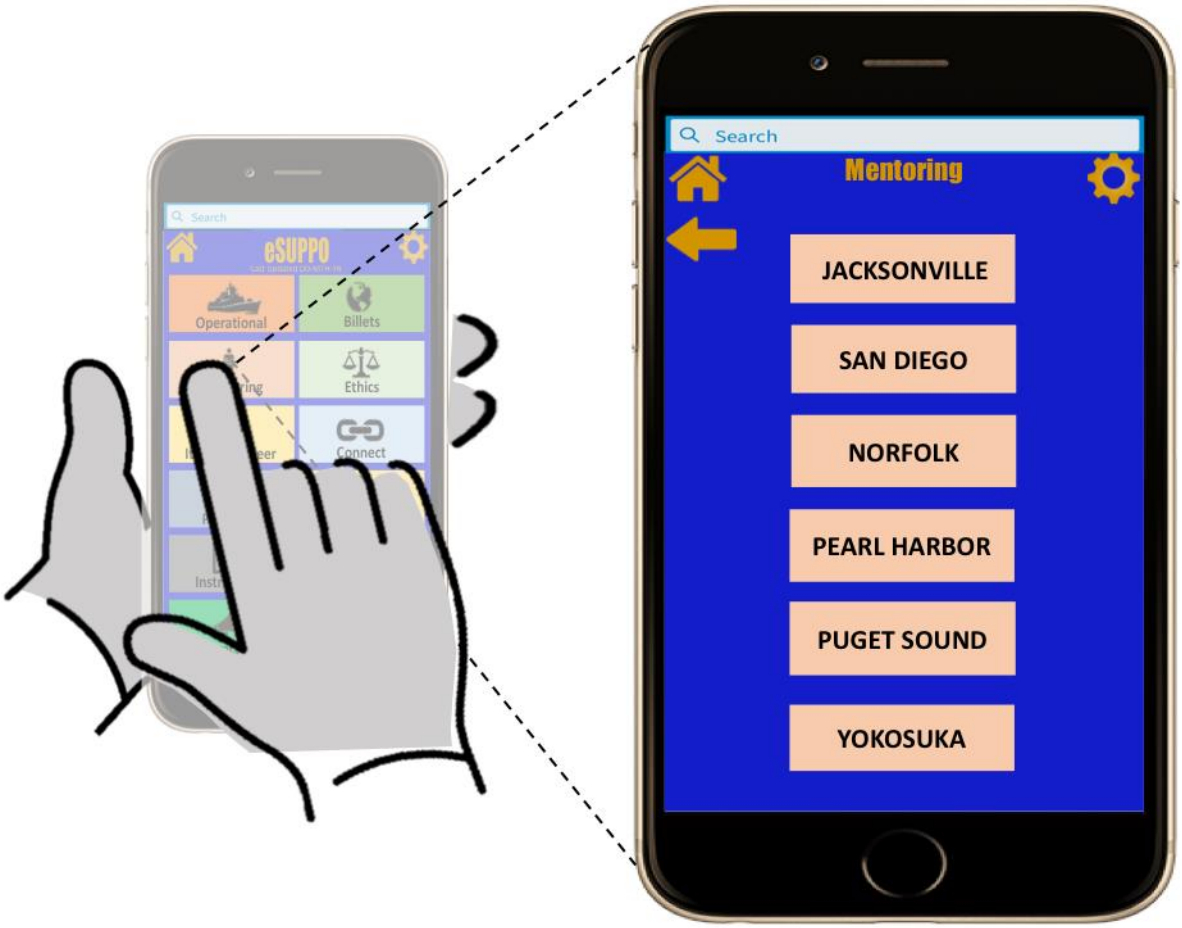

Figure 37. Proposed Fleet Concentrated Area Mentoring Options.

5. Announcement Icon

Supply Corps events are held throughout fleet concentration areas on a regular basis. Those events are geared towards providing mentorship, detailer meet and greet, and for updates and trends within the Supply Corps Community. The Announcement Icon, if implemented, will contain the necessary information for Supply Corps Officers assigned permanently or temporarily within the respective region. Figure 38 is an example of the suggested Announcement Icon.

Figure 38. Suggested Announcement Icon.

6. Push Notification

Effective mobile apps provide users with the option of being notified with an alert whenever updates occur. Push notice begins within a server, and conveys information from a product application to a device; conversely pull notifications require the customer to demand data from a server (Rouse, 2017). Ordinarily, when end users install an application, the initial opt-in preferences provided at that point can be modified as needed if necessary.

Rouse (2017) further stated that with the innovation of push notifications, a mobile app is not required to be open for a message to be received, which permits a mobile device to receive and show instant messages whenever the app is closed.

Likewise, push notifications expand engagement with applications, and enhance degrees of consistency, which help to maintain current users and attract potential users of a mobile application (Gazdecki, 2017). By implementing a push notification option in eSUPPO, Supply Corps Officers will know exactly when the Chief of the Supply Corps sends a message to the community. Users will also know when new billets are available, and when other important information is promulgated within eSUPPO. The alerts will also depend on the user's decision to opt-in to push notifications.

7. Search Function

Participants acknowledged (Figure 15) during the web-based survey, that they would utilize a search function within the app if it were available. Based on the high participant response rate of 58.18%, the authors conducted research by comparing the

search function of various mobile applications, before selecting the search function in LinkedIn as a design guide for the Next Generation of eSUPPO.

Having a lot of information can be ideal for an application; however, too much information can easily become complicated and inconvenient if users are unable to properly navigate through the available data (Lee, 2017). The vast majority of popular apps showcase a search function, which provide users with the option to find specific information within the app, by inputting specific words or phrases into the search function (Lee, 2017). A search function, if implemented within eSUPPO, will provide users the opportunity to quickly access specific information by searching with key words or specific phrases. Figure 39 is the suggested search function icon to be placed at the top of each screen within eSUPPO.

Figure 39. Proposed Search Function. Adapted from LinkedIn Mobile App (2018).

B. LIMITATIONS

Data collection for this research was limited to the Supply Corps Officers assigned to NPS. Although the sample size was small, the participation percentage suggested a strong reflection of the Supply Corps at large, as described in Chapter IV; the outcome may have varied slightly if data were collected from the entire Supply Corps Community.

The intended direction of this research focused directly on design. The time constraints within the NPS academic curriculum prevented a complete study of the required coding aspect for implementation within the recommended updated version of eSUPPO. Additionally, this is not a fully packaged study; functionality, interface and overall design were the main goals, and further research will be required to further investigate and explore additional improvements for eSUPPO.

C. FUTURE STUDIES

A low bandwidth, web-based version of eSUPPO was recommended in both focus group sessions as well as the web-based survey. The low bandwidth, web-based version with a similar design to LinkedIn, and the ability to seamlessly synchronize between the web version and mobile version, was discussed at-large and with high interest. As many who have served onboard a ship know, there are web-based versions of many of the training and various other Navy websites, which create quick access and ease of use. Therefore, it is recommended that additional research be conducted in order to create a low bandwidth, web-based version of eSUPPO with similar capabilities to LinkedIn.

D. CONCLUSION

Haselmayr (2014), in the article "Here's Why Your Business Needs Its Own Mobile App" described why business needs an app to operate, and stated that customers develop a sense of faithfulness and devotion to organizations whenever an app is available for use. Additionally, an app creates an immediate showcasing channel, provides customer appeal, and sets the organization apart from opposition (Haselmayr, 2014). The Navy and the Supply Corps Officer Community as a customer is no different, and in order to be an effective community, eSUPPO is a necessary tool that needs to function with maximum effectiveness.

eSUPPO should also keep up with the fast-paced technological advances occurring throughout the Supply Corps Officer's day-to-day operations. With eSUPPO's release in 2016, Supply Corps Officers were able to get up-to-date information with the touch of a button on a mobile device or smartphone. eSUPPO was intended to give Supply Corps Officers quick access to Supply Corps information like NAVSUP instructions, educational program information, links to Facebook pages and websites. eSUPPO also facilitated the ability to connect with the detailer (eSUPPO, 2016). To date, no analysis or case study has been conducted on the effectiveness of the app since its release.

Based on quantitative and qualitative data collected by the authors of this study, it is clear that eSUPPO should remain at the forefront of information exchange, and receive

continuous improvement and maintenance for maximized Supply Corps readiness. The director of logistics and engagement at NAVSUP, Capt. Jerome R. White, stated that innovation is constantly advancing in the business world, and naval logistics should reconsider or change course with its logistics management and business practices (Gabel, 2016). eSUPPO will transform the Supply Corps Community by improving communication and management practices, and has the capability to help the community reach greater heights (Gabel, 2016).

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