出國報告（出國類別：國際會議）

第五屆台平洋老烏鴉協會年會論文發表心得

Using big data approaches to explore how people evaluated armed forced in disaster relief mission

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摘要

此行主要目的參加第五屆老烏鴉協會太平洋會議（5th AOC Pacific Conference），本會議主軸為集合包含美國、英國、澳洲、日本、新加坡、菲律賓等國家中，執行資訊作戰（Information Operation）、心理作戰（Psychological Operation）、電子作戰（Electronic Operation）等專業軍事幹部年度研討會。本團主要目標是在 11 月 8 日，以大數據與民眾評估—以災害救援任務為例（Using big data approaches to explore how people evaluated armed forced in disaster relief mission）進行專文發表，內容在闡述以大數據方法的創新，結合電腦科學演算法與傳統媒體研究，對災後救援任務提供一種即時蒐研、反映並據以調整政策的精準評估機制。發表內容成功引起美國、新加坡與菲律賓代表的關注與興趣。並期待未來有進一步合作的可能性。

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出訪目的

此行主要目的參加第五屆老烏鴉協會太平洋會議（5th AOC Pacific Conference），並於會中發表論文：以大數據與民眾評估—以災害救援任務為例（Using big data approaches to explore how people evaluated armed forced in disaster relief mission）。

在美國，與蘭德公司、國際戰略研究中心、大西洋理事會這些夙負盛名的智庫相比，老烏鴉協會(The Association of Old Crows)不但鮮為人知，且帶有一些神秘色彩。但隨著美國軍事轉型的加速，老烏鴉協會的聲名日趨顯赫，作用顯著增大，已發展成為美國軍方、政府相關部門、民營資訊技術企業和軍事學術界的樞紐，軍技民用的資訊平台，對美軍資訊化建設，特別是資訊作戰作戰力量建設起到了至關重要的作用。

老烏鴉協會於 1964 年頒布組織章程。該章程明確說明了老烏鴉協會的性質，即「由那些對電子戰有共同興趣的人，希望保持和發展電子戰戰術的人，主張在電子戰領域加強資訊交流的人，希望認可在電子戰方面取得的進步和個人對之所做貢獻的人，以及要求紀念‘老烏鴉’夥伴的人等等，共同組成的一個民間學術組織」。由此，老烏鴉協會是一個民間智庫，其主要研究領域是電子戰與資訊作戰。

美國是一個重視科技立國的國家，同時，美軍是一支強調科技強軍的軍隊。老烏鴉協會這種重視軍事理論研究，又強調高科技開發的智庫，自然而然地成為軍界和政府有關部門的要角。國防部、各軍種部和有關軍需企業均與其建立密切合作關係。因此，老烏鴉協會的活動範圍日益擴大，吸收的會員越來越多。在成立後的僅僅兩年中，其會員就發展到了 2300 名，並陸續在美國各州成立了分會。這些會員除了有政府和軍方有關部門的主管及資深軍官，也有軍工企業負責人和民營資訊技術研究機構的負責人，還有民間學術機構的專家學者。老烏鴉協會亦以跨國戰略協會為主要發展目標，在歐亞許多國家建立了分會，發展相關資電作戰活動。近年老烏鴉協會作為一個非營利性專業協會，每年預算約為 240 萬美元；會員數量穩定維持在 1.4 萬人左右；會員中 29％為政府工作人員和現役軍人、49％為國防電子資訊企業人員、22％為學術研究人員；共有 65

個分會，分布於美國各州及 18 個國家(地區)，即澳大利亞、比利時、加拿大法國、德國、希臘、匈牙利、以色列、意大利、日本、荷蘭、挪威、韓國、南非、瑞典、瑞士、英國和中華民國。

近年來美國積極推進新軍事革命和軍隊資訊化建設，為老烏鴉協會的發展帶來了新的里程碑。於是，老烏鴉協會現在致力於資訊戰研究，既研究資訊進攻和資訊防禦，研究電子戰、作戰安全保密、心理戰、資訊作戰、物理摧毀和電腦網路戰。由於美國軍方越來越重視電子戰和資訊戰力量建設，老烏鴉協會的地位和作用日益提升，成為美洲與亞洲最重要的戰略溝通學術社群。

出訪過程與成果

本次出訪行程自 11 月 7 日起從中正機場出發，同日到達夏威夷後進行休整後，即於 11 月 8、9 兩日參加本年度老烏鴉年會（議程表見附件一）。其中，論文發表安排於第一日議程的下午。會議結束後並與美國、菲律賓、新加坡等國家業管資訊作戰、公共事務、心理作戰、電子作戰專業國防幹部交流互動。

每日議程開始，均安排資深美軍將官進行專題講演，其中第一日的講演者是太平洋司令部陸軍指揮官 Brown 上將。Brown 上將提及，在二十年前的資訊作戰概念中，沒有人知道要重視目標群眾（Target Audience）；但現在美軍充分了解，在整合資訊作戰、電子戰與公共事務等作戰行動中，對於人文、當地文化的了解，及對於宗教習慣的研析變成是戰爭順遂與否的重點。換言之，沒有全面性的目標受眾分析，就難以達成作戰的所望成果。尤其在全球部屬與區域發展複雜化的今日，一個良好的戰場環境與資訊整備計畫，必須要結合人文領域的決策思考模式（Human Domain），唯有如此，針對不同區域的戰場，才有機會依據戰場的文化特色，精準調整各項軍事活動作為，以最少的損失達成終戰指導。

為了增進世界各地電子戰、資訊作戰、軍隊公共事務相關專業軍事幹部的連結，並促進交流機會，老烏鴉協會每年均取辦年度會議，邀請各國交流。本屆年會由國防大學政治作戰學院院長余宗基將軍帶領新聞系傅文成教師與會，並發表論文。同時本場次論

文發表後，我國在本年度會議中和加拿大、菲律賓等國同為此次會議最有貢獻的友盟國家。

本次論文發表題目為，〈以大數據觀點分析國民對國軍期待評價-從救災任務談起〉，其主要研究內容是論述台灣 2,350 萬人口中，上網人口佔 1,750 萬。社群網站已成為民眾發表意見與參與公共事務討論的重要平台。網際網路 Web 2.0 的架構下，民眾可以即時迅速地接收訊息，並且加以回應。這樣的網路輿論型態對國防施政而言，是重要且難以忽視的珍貴資訊。本研究以大數據概念的文字探勘技術，蒐研自 2013 年 1 月 1 日起，至 2016 年 7 月 5 日為止，包含新聞討論區、討論網站、部落格、社群網站等全國 12,397 個媒體專頁中，國民對國軍形象、地位、士氣、戰力等構面所組成的「國軍整體評價」。研究發現，國民對國軍核心價值的期待為專注戰訓本務與維持國家和平穩定。在救災方面，大數據分析則有助於政府與在民溝通、物資動員預測與重建計畫傳播等重要工作（發表內容請見附件二）。

同時，論文發表前，本次會議主席同時也是太平洋司令部資深退役上校杜拉克先生特別向全場與會各國貴賓特別介紹我方，並且強調我國政戰局多年來與太平洋司令部有非常良好與密切的互動，在持續且深入的交流下，對華美雙方建立互信的合作機制上有顯著的影響與幫助。

論文發表後，包含新加坡、韓國、日本、菲律賓等國家與會代表，都表示對大數據分析與國防政策的結合作法感到興趣，並表達合作意願。其中新加坡的 Kee Kian Boon 中校，特別表達新加坡軍方目前正籌建大數據分析與媒體於情的分析機制，尤其在多語言的環境下，希望後續能建立這方面的交流基礎；菲律賓 Ceasr Molina 中校則是認為，大數據與國防建軍備戰的思考方向，對於菲國未來的國防政策決策機制有重要的參考作用，希望能透過類似的論壇，持續建立雙方溝通管道。

此外，美軍負責太平洋地區資訊作戰群（152nd Theater Information Operations Group, TIGO）首席參謀官 Janet Taso 上校在會後邀請講者進一步介紹論文中，如何結合電腦科學與傳播媒體輿論研究的方法，並探詢如何將此分析技術應用於除中文以外的其他語系的可能性；本團也運用參與會議時機，拜會包含 56 資訊作戰群的 Randolph 中校、39

資訊作戰部門的 Matt 中校、太平洋司令部資源與整合評估首席 Kailiwai 先生、海軍陸戰隊資訊作戰首席參謀官 Grohoski 先生等(參與討論人員請見附件三),雙方互動熱烈,為國軍與政戰局在未來在推動現代化與國際化的交流中,擴充關係網絡,提升軍事互動的多元性;值得一提的是,負責提供太平洋司令部資訊分隔運算技術專案經理 Tuhin Das 先生,亦於會後來信提出雙邊進一步洽談資訊處理與儲存的合作可能性(信件請見附件四)。

總體而言,本團在會議中發表的論文在會場引起熱量的迴響與反應,各國與會代表均對結合電腦程式語言運算與國防政策的輿論分析,抑或是目標群眾的大數據精準分析感到興趣。除上述的實際交流互動外,現場多數美軍資訊作戰軍官認為如將此分析技術應用於戰場的輿論即時分析,資訊作戰整備的透明度與精準度將大幅提高,對於資訊作戰的效能將有顯著的提升。

同時與會代表也表示,這樣的論文交流,對其未來的工作發展有正面的助益,希望能夠與我國建立意見交流的基礎。參與本屆 AOC 的論文發表,也讓包含美國在內的太平洋區域國家了解我國在軍事研究的前瞻性,厚植未來發展雙邊或多邊關係上的能量。會議結束後,亦參訪太平洋論壇與美國東西中心等專業研究智庫,緊密兩國間智庫能量的聯繫。

心得及建議

老烏鴉協會的發展目標是整合資訊作戰、電子戰、公共事務、心理作戰等,對當前戰爭型態中,重要的戰略與戰術層級的作為。這樣的發展特色其實很大的一部分是包含在我國軍政治作戰工作中的重要環節,透過長期與包含美、英、新、日、韓、菲等國家執行上述任務的專業軍官交流,可以提升國軍執行任務的水準外,在戰略眼光與戰術素養的拓展上,亦有重要的幫助。

總結上述會議參與心得,提出以下建議:

(一)持續編列預算,支持鼓勵國軍相關專業人才參與老烏鴉戰略協會的交流活動。透過每年的論文發表與意見交換,除提升國軍專業幹部素質外,亦可以周邊國家資

訊作戰相關領域軍官建立聯絡網路。

（二）持續建置我國軍大數據分析機制。從本次交流的熱烈程度可知，大數據分析應用於國防施政、輿情分析與戰場情報準備均有其前瞻與實用性。目前國軍的大數據發展，除應用於輿情觀測分析外，也逐漸培養研究種能。建議應持續編列預算支持符合國防施政特色的大數據分析計畫。

附錄

附錄一

5th AOC PACIFIC CONFERENCE

Program - Day 1 - Tuesday 08 November 2016

0700 - 0800	**Coffee & Pastries / Check in**
0800 - 0805	**COL Arthur Tulak**, USA (Ret), Symposium Chair, Research Faculty, Georgia Tech Research Institute, Vice President, Hawaii AOC Diamond Head Chapter: Symposium Opening Remarks.
0805 - 0810	**Wg Cdr John Clifford** OBE, RAF (Retd) AOC Director Global Conferences: Administration Remarks
0810 - 0820	**BGen Mario LeBlanc, RCAF**, PACOM DJ3, Welcome and Introduction of Keynote speaker
0820 - 0840	**Keynote Address – GEN Robert B. Brown,** Commanding General, U.S. Army Pacific
0840 - 0900	**Col Brian "Hack" Jackson,** USAF, Chief, Information Operations Division, PACOM J39: "PACOM J39 View on the Pacific IE and the Theater IO Team"
0900 - 0945	**Chad Sbragia,** PACOM Strategic Focus Group, "PRC National Use and Control of Social Media"
0945 - 1015	**Wendy Marotta,** Lt Col USMCR, AECOM, "Voice of America – A Cold War Case Study on the Importance of Measures of Effectiveness (MOE)"
1015 - 1045	**Networking Break**
1045 - 1145	**Ms. Libby Liu**, President of Radio Free Asia: "Breaching Anti-Access Measures to Reach Target Audiences in Denied Environments"
1145 - 1200	**Pacific Region AOC Chapter Updates**: **Mr. Tuhin Das**, President, Canada Maple Leaf AOC Chapter, and **Mr. Jeff Malone**, Director, Australia Chapter
1200 - 1300	**Buffet Lunch in the DeRussy Room**
1300 - 1345	**Zachary Levy** Asymmetric Warfare Group: "Information Operations, Hybrid Threat, and a Denied Environment"
1345 - 1430	**MG YU, Tsung-Chi**, Commandant, Fu Hsing Kang College, National Defense University, R.O.C., and **Assistant Prof. Fu, LTC Wen Cheng**, ROC National Defense University: "Strategic Communication"
1430 - 1510	**Mr. David C. Grohoski**, Chief of Staff, Marine Corps Information Operations Center: "MAGTF IO in the PACOM AOR: building partnership capacity in the IE"
1510 - 1530	**Networking Break**
1530 - 1630	**Panel Discussion:** Leveraging Ally and partner actions in the Information Environment. *Panel Leader:* **COL Janet Tsao**, 152d TIOG. *Panelists:* COL Cesar Molina AFP, CDR Jonathan Worthington RN, COL Randall Cartmill CDR 7th POG, COL Curt Simonson, CDR 56th TIOG.
1630 - 1800	**Networking Reception and Social at Hale Koa Luau Garden**

Program subject to change for operational reasons.

1
UNCLASSIFIED

Program - Day 2 - Wednesday 09 November 2016

0700 – 0800	**Coffee & Pastries / Check in**
0800 – 0810	**LTC Gary Lyke**,USA, Chief, TCM-EW Capabilities Development Branch, Cyber Center of Excellence, President, Hawaii AOC Diamond Head Chapter: Opening remarks & Introduction of Key Note Speaker
0810 – 0830	**Keynote Address – BG Richard K. Sele**, Deputy Commanding General USACAPOC: "Training for More Effective Interagency Integration"
0830 – 0905	**COL Randall Cartmill**, US Army, Commander, 7th Psychological Operations Group: "Disinformation Enabling Maneuver in Hybrid Warfare"
0905 – 0945	**COL Teresa Wardell**, USA, Chief, CJ39 IO Division Combined Forces Command (CFC) / United States Forces Korea (USFK): "A2/AD on the Peninsula"
0945 – 1020	**Jason Schuette, LtCol USMC (Ret),** Science Engineering Technical Assistant (SETA) to DARPA "Advanced RF Mapping Program (RadioMap) for Operational Use"
1020 – 1040	**Networking Break**
1040 – 1120	**Lt Gen USAF (Ret) Robert "Bob" Elder Jr Eng.D**, Research Adjunct, Georgia Tech Research Institute, AOC Past President: "The Integrated Use of EW, Cyber, and IO by Gray Zone Actors"
1120 – 1200	**Lt Col USAF (Ret) Jesse "Judge" Bourque,** Senior Defense Consultant (USD Policy & OSD CIO): "Future of JEMSO"
1200 – 1300	**Buffet Lunch in the DeRussy Room**
1300 – 1315	**Diamond Head Chapter**, Remarks & Installation of Chapter Officers for 2017.
1315 – 1400	**COL Kenneth Rector, USA,** Commandant, Army Cyber School: "Future of Cyberspace Operations, Electronic Warfare and Spectrum Management"
1400 - 1445	**Major Spencer Crandall,** USAF, Chief, Information Operations, PACAF / 613th Air Operations Center: "Renewed emphasis on psychological operations (MISO) to create operational dilemmas for decision makers"
1445 – 1525	**Dr. Daniel Kilfoyle** and **Dr. Matthew Markel**, Raytheon Principal Engineering Fellows: "Cognitive Electronic Warfare: It's Not Just About Machine Learning"
1525 – 1540	**Networking Break**
1540 – 1630	**Panel:** Understanding the IO implications of A2/AD in the Asia-Pacific. *Panel Leader:* **COL Curt Simonson**, CDR 56th TIOG. *Panelists:* COL Teresa Wardell, USFK J39; CDR Scott Janik, JSJ39; COL Dean Burbridge, USARPAC FXD IO Director; Mr. Austin Branch, Executive Director, Information Strategy & Programs at COLSA Corporation
1630 – 1640	**Recognition and closing of UNCLAS portion of the symposium**

Program subject to change for operational reasons

附錄二

Using big data approaches to explore
how people evaluated armed forced in disaster relief mission

Abstract

In Taiwan, there is about 2/3 population is the Internet user. Social networking websites have become a crucial information platform for participating the public affairs, connecting with friends, and receiving information. People can receive messages real- time and respond public policies with a Web2.0 platform. Such public opinion on the Internet is an important reference for defense policies. Two studies were included in this program. Firstly, this program used a big data approach and text mining technic to collect data from January 1, 2013 to July 5, 2016, including news forums, discussion sites, blogs, social networking sites, totally 12,397 media pages, more than 580,000 military related post and discussion online, and to analyze how people evaluated military sector, and which is constituted by four aspects, the ROC armed forces image, status, morale, and warfare capability. Regarding the second study, a case study on disaster relief was proposed to examine communication strategies from pervious big data research results. Implication are discussed.

Key words: Big data, Disaster relief, Text mining, ROC armed forces, Evaluation

Introduction

Nowadays, there are about 23.5 million people in Taiwan, and 17.5 million populations using on the Internet in their life for connecting with friends, receiving information, and participating public policies. The production of context on the Internet is approximately 6 billion words per day（Creativity, 2015）. Moreover, under the rapid technological progress of Web2.0, people have begun to use the Internet to express their voice on affairs they concerned about. This User-Generated Content (UGC) communication format was considered an alternative public affair participation model. In other words, the development of the Internet media changed the public's media using behaviors. People have developed habits of using the Internet media to make friends, contact knowledge, entertaining, and voice public policies, course, including the defense policies.

Hence, online social media, such as Facebook, Youtube, Line; news sites, discussion boards, have gradually changed people's habits of using media. Social media have become one of the most popular media with the highest using frequency and the longest logging time. Issues related to the ROC armed forces get a great deal of discussions varied in different size on the Internet. For example, when the president Tsai inspected the troops, her "Paint and Grassland" speech—attracted 210 thousand people to express their views on the Internet in a week. Internet provides multi-points transmission mode, so users can quickly interact with others. Such plural communicating approaches are different from traditional media. Users can bypass the media gatekeepers, government departments and format public opinion, and participate in public policy (Schenker, 2013). Hence, by observing, sorting, and analyzing a great volume of information on how people evaluate and discuss about the ROC Armed Forces under social context is precious information; simultaneously, program also concern these issues.

Compared to the traditional poll, the large-scale information searching from the web, also called "big data", has advantages of representative and authenticity. Firstly, the number of samples significantly enhance; tens of thousands or even hundreds of thousands data are easily collected via the web which is superior to samples of traditional polls. Secondly, the big data analysis has the "non-invasive" characteristic. People speak, interact and exchange information mostly spontaneously on the Internet, different from traditional polls –specific questions and limited respond. (Boyd & Crawford, 2012).

This project integrated big data research and case study together to provide a solid crisis/ disaster communication plan within a Web2.0 environment. The program used text mining skill to structure crucial aspects of how Taiwanese evaluate the ROC armed forces through long time observations. Because big data approach can analyze large quantity of data, and data sources are from people's spontaneous remarks, the result is closer to the practical overall military evaluation.

Further, most remarks that people discuss on the web are User-Generated Content, which means that people are not merely the message consumers, but also the message producers—Prosumer. (Kaplan & Haenlein, 2010). Under such dissemination pattern, through social media and the Internet as platforms, political participating intentions and practical participated behaviors of audiences have a mutually reinforced association. (Ku & Chen, 2007; Knobloch-Westerwick & Johnson, 2014). Such interactions also strengthen political participations on the Internet and influence real policy. For example, in August 2013, the death of Hung Chung Chiu, showing the rapid transmission of network to form public opinion quickly and even calling 25 thousand people to protest in front of the Presidential Palace, resulting the abolition of court martial during peacetime and transfer of military prisoners to civilian prisons.

The program using big data analysis which is different from the previous sampling approach, analyzed massive data, assisting by the “National Taiwan University Sentiment Dictionary" to figure out the trend of military social status and image, inquired people’s emotion toward armed force , and explored the crucial causes of this outcome. The overall rating is the ROC armed forces’ P / N value (P means Positive comment; N means Negative comment), so the higher ratio means that Taiwanese hold higher evaluation levels toward the ROC armed forces; otherwise lower.

Therefore, the present study focus on the following three points as the research objects. Firstly, compare national’s overall evaluations among different military missions. Secondly, through researching on practical experiences on cases analyses and huge amount of data, this study collected public opinion whether positive or negative toward the Ministry of National Defense(MND) in order to provide references for the MND to establish communication channels, ranging from: (1) How people evaluate the ROC armed forces through the media via the Internet. (2) What approaches are the national's expectations and evaluations to claim during different military missions, (3) Who are those intermediaries involved in the ROC armed forces related issues and spread messages.(4) This program will provide a case study to demonstrate how to use online social media for improving evaluation results and receive people’s feedback to elaborate disaster relief strategies.

Literature Review

The research provide the evidences about how changing media landscape influence people evaluate military and its missions, especially on disaster relief. Further, the current study aimed to explore the indicators and dimensions which the netizens evaluated the ROC armed forces, and how the messages disseminated out. The program summarized studies on online message communication and public affairs involvement as foundation, including military capability, military image, military social status, and military morale, as analyzing framework.

1. The changing media world- Social media and disaster

The Internet and social media have radically and irreversibly transformed the communications landscape. We are living through a media revolution that rivals the effects of earlier tectonic shifts—the inventions of the printing press, telephone, photograph, radio, and television.

The Internet has created a "new" news landscape and changed forever the way and speed in which the news is produced and consumed. Former *New York Times* columnist Frank Rich explained, "We didn't recognize we were up against change as sweeping as the building of the transcontinental railroad or the invention of electricity".

The old communications paradigm—of professionals broadcasting one message to many—is over. Now communications is a conversation between the many—we are all news producers and consumers, content creators and curators. .

The people's appetite for news has not dropped; in fact there's evidence it may have increased. Most mobile users are not replacing one platform with another. According the Pew Research Center's Project for Excellence in Journalism, "they are consuming more news then they had in the past". It is that their consumption of news from traditional sources has declined and their reliance on the Internet and social media for news has increased dramatically. According to the Pew Research Center for the People & the Press, Internet & American Life Project's biennial study of news consumption habits, more Americans get their news online now than from radios or newspapers, and the number of people relying on social media as a news source has doubled since 2010.

(1) What is social media?

Internet-based tools, technologies, and applications which enable interactive communications and content exchange between users who move back and forth easily between roles as content creators and consumers are all components of social media. While many traditional media (such as newspapers and television) remain important disaster communication channels, traditional media primarily facilitates one-way information dissemination. Social media provides the platform for real-time two-way dialogue and interaction between organizations, the public, and individuals. Social media outlets include, but are not limited to, the following groups:

- **Social networks:** A social network is a website that allows people to connect with friends and family, share photos, videos, music, and other personal information with either a select group of friends or a wider group of people based on shared or common interests. Common social networks include Facebook, MySpace, and LinkedIn.
- **Blogs:** Online journals that provide a platform for individuals and organizations to write and share content where readers can comment on the content as well as share that information with others. Examples include WordPress, Blogger, and TypePad.

● **Microblogs:** Sites that allow people to share limited amounts of information through posts, often with links to additional information. The best example of a microblog is Twitter, which allows sharing of bite-sized (140 character) content.

Microblogs play an increasingly important role during breaking news events and disasters. Other examples include Tumblr and Yammer.

● **Crowdsourcing:** Crowdsourcing is making an open call to the public asking for solutions to a problem. These groups are being asked to use the Internet and its vast search and connective capabilities to gather and disseminate data to help out an overloaded infrastructure that cannot or will not provide services needs in an emergency.

Crowdsourcing social media sites have been used successfully in response to emergencies by:

Managing traffic following natural disasters.

Tracking food radiation contamination following the 2011 Japanese earthquake and tsunami.

● **Digital mapping:** Data from many disasters such as fires, floods, and even disease outbreaks are compiled and turned into real-time, interactive visual images or digital maps. Google Maps and Ushahidi are examples of mapping programs used by the public.

● **Forums:** Online discussion groups focused on particular interests and topics.

They have diverse topics of interest available for discussions. They can be powerful and popular elements of online communities during a public health emergency.

LiveJournal and ProBoards are good examples.

● **Video sharing:** Online sites for sharing video—including YouTube and Vimeo.

● **Photo sharing:** Online sites for sharing photos and multimedia content. Flickr and Pinterest are prime examples.

● **Wikis:** Web pages where people work together as a community to create and edit content. Wikipedia is an online encyclopedia that allows participants to add content or edit information included in the entries.

(2)Social media and disasters

Social media use rises during disasters. According to the START study on

"Social Media Use during Disasters," "Research points to the rapt and sustained attention the public may give social media during disasters".

"According to Twitter, people sent more than 20 million tweets about the storm from Oct 27 through Nov 1. This was more than twice the usage from the two previous days. From the day the storm made landfall on Oct 29 through Wednesday the 31st, news, information, photos and video made up more than half of all the Twitter conversation" (PEW, Sandy 2013). Instagram's chief executive officer Kevin Systrom told The Associated Press that about 10 pictures per second were being uploaded to Instagram with the hashtag #sandy. After the earthquake and tsunami in Japan on March 3, 2011, Twitter saw a 500 percent

increase in Tweets because people were trying to reach friends, family, and loved ones. According to Twitter, “during the initial stages of the Japanese earthquake, the volume of tweets being sent was up to 5000 tweets per second on five different occasions”.

The Boston Police Department’s follower count spiked from 40,000 to more than 300,000 during coverage of the Marathon bombings and ensuring manhunt for the two terrorist suspects.

“A quarter of Americans got information about the explosions and the hunt for the bombers on social networking sites such as Facebook and Twitter. Young Americans in particular kept up-to-date through social media. Slightly more than half (56%) of an 18- to 29-year subgroup polled by Pew got bombing-related news through social networking sites” (Pew Research Center, 2013).

News consumers turn to social media turning disasters because it provides:

● **Immediate access:** Half of all Americans are now smartphone owners which means they can log onto social media with the tap of a finger. The proliferation of personal computers, laptops, tablets, and mobile phones provides previously unparalleled access to information through social media.

● **Familiarity in a frightening time:** People are more likely to use a particular social media platform if their friends and family frequently use it and/or they trust and ascribe a high level of credibility to a social media platform. People are more likely to use social media if their friends and family are also users. People turn to existing social networks during disasters, including social media networks created before disasters .

● **Real-time information and situational awareness:** Social media use rises during disasters as people seek immediate and in-depth information. Information seeking is a primary driver of social media use during routine times and spikes almost instantaneously during disasters. After the 2011 Japanese tsunami, there were more than 5000 tweets per second about the disaster. Social media uniquely provides real-time disaster information; for example, during the 2007 California wildfires, the public turned to social media because they thought journalists and public officials were too slow in providing relevant information about their communities. Tweets from hotelier Richard Morse provided eyewitness, real-time accounts of conditions in Port-au-Prince after the 2010 earthquake in

● **A way to reach rescuers and ask for help:** More disaster victims are turning to social media for help and rescue, especially in events where the loss of phone lines and cell towers make it impossible to call 911. Three out of four Americans (76 percent) expect help in less than 3 hours of posting a request on social media, up from 68 percent in 2011.

Both the 2011 and 2012 Red Cross surveys confirm that the public overwhelmingly believes government agencies should be monitoring social media for distress calls and respond promptly. After the 3/11 Japanese tsunami, 59-year-old Naoko Utsami found herself on the

rooftop of a community center with just one line of communication, email on her mobile phone. She emailed her husband, who emailed their son in London, who sent a Tweet to the deputy director of Tokyo, who initiated the air rescue of Utsami and 400 others trapped on the roof.

● **Personal status information:** In a 2012 survey, the American Red Cross found that three out of four (76 percent) say they have contacted friends and family to see if they were safe or let loved ones know they are safe during disasters (American Red Cross, 2013). Forty percent of those surveyed said they would use social tools to tell others know they were safe, up from 24 percent in 2011 (American Red Cross, 2013). The top term employed by Facebook users in the United States the day after Hurricane Sandy hit was "we are OK."

● **A tool for reuniting families and friends:** After devastating tornadoes hit Joplin, Missouri, dozens of Facebook pages, including "Joplin Tornado Citizen Checks," helped reunite friends and family and locate the missing. According to *Time* magazine, these pages "quickly became the fastest way to get information, as survivors and their relatives relied on social media as they might once have leaned on the Red Cross or local relief agencies". After the 2010 Haiti earthquake, Google worked with the U.S. Department of State to create Google

Person Finder, an online registry and message board for survivors, family, and loved ones affected by a natural disaster allowing them to post and search for information about each other's status and whereabouts. Google Person Finder launched in English, French, and Haitian Creole on January 15, less than 3 days after the earthquake.

● **A way to meet real-time needs:** After Hurricane Sandy hit the Northeast in

October 2012, in addition to the obvious sources for information about food and shelter like the American Red Cross, FEMA, as well as the *Ready.gov* site, hashtags like #needgas [zipcode] #chargingstation #warmingshelter were created so the public could directly aid the public. More than a third of the respondents surveyed by the Red Cross say social information has motivated them to gather supplies or seek safe shelter.

● **Unfiltered information:** Social media provides "raw" information unfiltered by traditional media, organizations, or politicians. It also provides authorities the opportunity to bypass the media and communicate directly with the public. As one of the Boston police officers responsible for the social media content during the Boston Marathon bombings put it, "We don't break news. We are the news".

● **A way to hold officials accountable:** When the Japanese government would not admit the scope of the danger from leaking radiation at the Fukushima nuclear power plant after the 2011 earthquake, social media and crowd-sourced information were used to create an accurate picture of the threat.

● **A platform for volunteering or donating:** During disasters, people use social media to organize emergency relief and ongoing assistance efforts. Both Facebook and Twitter were

used for disaster relief fundraising in Haiti. In the first 48 hours following the Haitian Earthquake, the Red Cross raised more than $3 million from people texting $10 donations.

● **A tool for building community and resilience:** As the public logs in online to share their feelings and thoughts, they build relationships and create a sense of community even when scattered across a vast geographical area. These virtual communities can be temporary or continue through recovery and beyond.

● **Emotional support and healing:** Disasters are tragedies and they prompt people to seek not only information but also human contact, conversation, and emotional support.

Clearly social media is already intertwined with disaster communications and information management and is now a critical element in preparedness and response communications. As Americans are becoming increasingly reliant on social media and mobile devices during emergencies, so inescapably are the media and emergency managers.

2. **The ROC armed forces warfare capability**

The term "warfare" is used in the definition of the word “warfare capability " in the Newly compiled Chinese dictionary，and it also defined as "Power or ability to do something" in the Concise Oxford Dictionary. With emphasis on individuals or groups for theirs’ ability to respond to things and situations. In other words, what is the definition of the term "warfare"? It should be elaborate under context-dependent and then to be given in a specific meaning.

Similarly, what is the "capability of warfare" of national defense depends on the depth and breadth of the scope that researchers involved. Taking the domestic research as an example, since the Han Kuang-1 exercise, not all of the imaginary enemy are China's People's Liberation Army, the media still call our imaginary enemy People's Liberation Army, also PLA. (Arthur, 2011; Pan and Lo, 2015; Zhu Ming, 2016; Wu Zhou & Zhang Zijian, 2016; Apple Daily, 2016; Pan, 2016). To sum up, based on the situation of unequal national power between the two countries, the research on “warfare" mainly focuses on the following three parts:

(1)The ROC armed forces in the asymmetric war

Asymmetric warfare / engagement refers to the form of warfare in which both the warfare capability, strategy and tactics are in disparity, namely, non-formal military operations such as guerrilla warfare and terrorist attacks (Mack 1975; Lebovic 2010).

The above-mentioned viewpoint is equivalent to the concept of “Ultra-limit war" proposed by Qiao Liang and Wang Xiang-sui (1999), all of which are measured at a certain level by differences between the two countries’ national power. However, asymmetric warfare focuses on physical confrontation, and ultra-limit war is to focus on virtual network warfare or legal war and other non-entity war. This is consistent with the pattern of asymmetric

warfare aimed at non-physical forces: the weaker of the overall physical force, the more flexible deployment should be required, utilizing the qualified resources and information operations to make all kinds of information in the battlefield unrestricted, no matter time and space (Grange, 2000; Buffaloe, 2006).

Based on the above-mentioned situation in which the PLA forces are committed to developing to the modern coalition, along with the military-to-civilian relations since the nationalization, the demilitarization, to the legal system as well as the volunteer military system of the western model (it will be described in the following "status" context), the number of troops is decreasing, and the overall warfare capability is "asymmetric".

WU Qian-huang (2001) and Lu Junsheng (2003) both discussed the development of cross-strait situation in the post-Cold War period and put forward the concept of "asymmetric war" as a specific act of war and the formulation of relevant military strategy. Ceng Yixian (2015) thought that the rise of the PLA caused severe challenges to Taiwan, and then deepen the asymmetric war as the overall strategic positioning of our country, and as the basis of enhancing the overall warfare capability.

(2) Intangible combat capabilities

According to Taiwan's 2011 national defense report, pointed out that the national defense force covers intangible combat capabilities, joint operations effectiveness, information and EW capabilities and so on, in which intangible combat capabilities is the primary. From the national defense report, how to forging intangible combat capabilities is enhancing the militaries' sense of moral value, strengthening the will of the service members, understanding military history, being full of patriotism, and being confidentiality anti-espionage.

However, forging intangible combat capabilities is, undoubted as the following section "morale" which is the concept of individual responsibility for specific tasks, organizational identity and the degree of supporting for the commander's intentions. The so-called "three faith", some of the past study viewed these two as one concept (Zhang Shen Chang, 2000; Lin Zhilong, 2005, Xie Hongjin, 2009). Thus, the "combat capabilities" of the intangible combat capabilities is not the same as the two above-mentioned concepts, which are based on strategic and tactical bases.

The above discussion of the literature on warfare, not focus on the warfare capability of a single member, because the warfare effectiveness of the present study is the overall warfare capability of the ROC Armed Forces which is based on the results of coordinating among services and developing the joint operations capability effectively. The keywords related to the "warfare capability" are: training, warfare, combat, war, and the research question 2 presents as follow:

RQ2: What are factors about the "warfare capability " aspect of the Internet evaluation?

3. The ROC armed forces image

Boulding (1961) said that image refers to a person's subjective "knowledge" , related to relationships and emotions at specific times and spaces. According to his theory, the image will affect the behavior of the individual, and the image will be covered, or even changed by the information received by the individual, which is not constant (Conflict Research Consortium Staff, 1999).

Boulding's abstract conception is the same as that of the metaphysics of Ontology and the Gestaltism of psychology: the former discusses the nature of the object (Petrov, 2011). The latter, discusses a certain part of things and how it constructs the laws and rules of the image in the minds of individuals (Dewey, 2007).

The image is deeply influenced in the fields of peace studies, psychology, sociology and marketing in international relations in the future. The reason is that the hypothesis assumes that the image is subjective, and it can be changed through different information, code, experience, or other content (Jenkins, 2013). That is, the image is a one-way linear hierarchical thinking mode, flowing and confined to a specific time space, such as the symphony generally depends on how the commander to manipulate the full melody and cadence (Dichter, 1985). In this context, the word image focuses on psychological perceptions of the individual, not the distorted stereotypes caused by media (Gertner & Kotler, 2004), which are different from the ROC armed forces status described below.

In Summary, the individual's image of a particular person or things is ambiguous, and will have a relatively subjective differences due to the reception of disparate messages. In this study, for example, the public perception of the ROC armed forces image is based on what the information they received. In other words, when interpreting the image of the ROC armed forces, they did not follow the "image" created by the national army, which led to differences between the two sides. Therefore, how to create a positive image of the ROC armed forces is one of the crux considerations.

In addition, the importance of the image is not only the subjective perception of the "outsider" about a particular person or organization, but also has a great influence on the formation and strengthening of its "internal" members' identification (Dutton, Dukerich, & Harquail, 1994; Vigoda-Gadot & Ben-Zion, 2004). This is not only validated by private enterprises, but can also be confirmed in bureaucratic military organizations (for example, the US Army) and focus on multiple facets (e.g., image to the outside world, internal image, current image building and overall image planning in the future) (Lievens, Van Hoye, & Anseel, 2007).

On this basis, the ROC armed forces should be seen as an organization (enterprise), and then explore the image. So, the image plays a very important role among the business owners, employees and outsider. Many domestic and foreign studies have pointed out that the

external image that business owners built, as well as its internal image will affect the identity and willingness to be employed, namely: how people evaluate the ROC armed forces, not only affects soldiers' willingness to stay in the military and attract people to participate the military service, but also suggested that if job seekers have a high positive impression on a given organizational at the beginning, it will not be depressed or weakened after their appointment (Cable & Yu, 2006).

In reviewing the relevant research in domestic, Gao Zhongliang (2015), Lin Xianxing (2016), Luo Jinuo (2016) and others, validated the above factors. It has been proved in the study that the image of the military is positively related to the willingness of its members to stay, so it is one of the main points for positive image construction.

However, when it comes to analyzing the image of the ROC armed forces, it is not similar to the general business or other military systems in foreign countries. Since the end of the martial law, the ROC armed forces has undergone a series of downsizing reforms; therefore, building " small but superb, strong, and smart ROC armed forces " as the main principle (Wang Dingjun, 2012; Liu Lirong & Zeng Yingyu, 2014) , and avoid participating the international operations, with the core values of "defending ", focus on basic national defense and disaster prevention (Wang Han Guo, 2011). In other words, in addition to intensify the armed forces, the main missions is to relieve the floods and all kinds of temporary disaster events, thus providing the abstract "service." This is different from previous empirical studies because previous studies emphasize on their corporate image through promoting goods or distributions rather than the "services" in marketing (LeBlanc & Nguyen, 1996).

Excepting factors that were provided above, the ROC armed forces cannot help but to face the "post-modern" issue, due to following the US military all-recruiting system. The US military in 1973 started to implement all-recruiting system, although the overall military power developed rapidly, compared to the stage of Vietnam War, but it also had the problem of cognitive disorders to soldiers in their civil society (Ricks, 1997; Holsti, 2012). In other words, there is a problem with the society of the relationship between the military and the people (which will be discussed later), and moreover, the recruiting has a profound influence on the physiological and sexual orientation of the recruiting subjects (Masculinity) (Brown, 2012), how to keep balance between the overall warfare and the moral values of gender equality to build a positive image is an important point in the future.

In sum, the image should be considered as one of the indicators of this study, including the national non-operational image of the military, civil or organizational behaviors, and military-related issues, the key words are as follow: military law, military discipline, disaster relief, disaster rescue, national defense, in the military, and for the above keywords the research question 3 presents as follow:

RQ3: What are factors about the "image" aspect of the Internet evaluation?

4. The ROC armed forces social status

Social status refers to the position of a person or a group in social relations. From the perspective of sociology, it can be divided into two categories: the ascribed (such as sex, race), the embodied (such as appearance, body posture), and achieved (such as posts or skills) and by these three properties constituting an overall social status (Master), and People or groups play a role in the society to meet the others' expectations of their master status (Ferris & Stein, 2010).

Therefore, if we want to discuss identification, rank, the overall identity of military organizations and the welfare of military personnel of the ROC Armed Forces, we should under the sociology to explore those military science questions. Military sociology does not view the military as a separate social structure, but one of the many organizations in the whole society, and what role it plays and what relationships it has with other organizations in the society (Coates & Pellegrin, 1965; Lu Xun, 1999).

When military social status is explored through military sociology, the war plays an important role, and the power elite with a military background also has an influence on the overall national policy (Lindsay, 2010). In sum, the warfare capability is generally differentiated according to the context of time and space in the history, which can be roughly divided into: the Second World War, the cold war era and the post-cold war era (Ritzer & Smith, 2007):

(1) The Second World War:

In the early years of military sociology, the research was done mostly by the individual researcher, which is aimed at small-scale analysis, such as troop harmony, group dynamics, race relations, etc., and mainly depended on psychology.

(2) The Cold War era:

After the World War II, the focus of this school from comprehensive mobilization to explore how does the large-scale standing forces and civil-military relations develop under the non-military political government. For example, Huntington (1957, cited in Peng Weihao, 1998) argues that specialized forces should be isolated from civil society, legally limited their autonomy. However, Janowitz (1960, cited in Huntington, 1981, translated by Hong Luxunand Hong Songhui, 2006) argues that the separation of forces from civil society is extremely dangerous, and specialized units should be integrated and regulated in different rules. Moskos (1986) also suggests an institutional / occupational model, in which the military value is transformed from patriotic to career-oriented. Therefore, recruitment should put

emphasis on strengthening protection for their rights and interests, enhancing services for military families and task scheduling so as to consolidate their support, and maintain a safe and sound atmosphere in their families.

(3) The post-cold war era:

In the post-Cold War era, the military system of western countries changed from conscription to recruitment, and the country's military and political forces were also turned into international peacekeeping and crisis management. Therefore, African tribal conflicts, Korean nuclear crisis, terrorism and the rise of and China are the research scope of military science (Segal & Tiggle, 1997; Moskos, Williams, & Segal, 2000; Booth, Kestnbaum, & Segal, 2001). In addition, in the view of the above-mentioned, some scholars also indicate that, in this period, the leaders of the military who were not soldiers led to the problems and misunderstandings during their management (Feaver, 1996; Feaver & Kohn, 2000).

Thus, the development of western military sociology, as well as the definition of the role and responsibility in sociology, we can see the military's overall status in society, will be different due to peace or war time, that is, the social status of the military is changeable rather than constant. As mentioned above, at the beginning of military sociology, it was a comprehensive war situation. The composition of the army is based on patriotism. It is formed through mobilization and relations between military and civilian are inseparable. The military even has a great influence to national policy.

Take the United States as an example. Since 1945, five months before the end of World War II, President Truman took office until President Clinton, every president has been involved in the Second World War. Eisenhower, Johnson, Nixon and Ford even served as high-level leading officers. It is reasonable to conclude that Huntington and Janowitz would study the relationship between the military and the civilian in the whole society, as well as their boundaries with the national policy-making department (Burk, 2002).

Reviewing the armed force social status in Taiwan, we cannot fully follow the Western scholars' theory, although we are deeply affected by the United States. After the Second World War, while western scholars reflected on the boundary between the military and the civilian, Taiwan has begun martial law period for 38 years. Because the executive power and judicial power transferred to the military authorities (guard headquarters) to exercise, so that the party leader had the military power, and became one-party authoritarian state, and then indirectly shaped the white terror atmosphere to impact relations between the civilian and the military in the future (Liu Qingxiang, 2000; Chen Liangzhi, 2004).

Since1987, the ending of martial law until now, approximately 30 years, due to the political withdrawal from the military, to complete the military nationalization and the

civilian-led culture within the military is challengeable. Even if the system can be legislated to achieve administrative neutrality, the military organization legalization and military nationalization, similarity to the Western-style military-civilian relations, it is not fully acceptable to people at the degree of their psychological levels (Su Junliang, 2008).

For example, when it comes to, it should be emphasized that the ROC armed forces has been nationalized for decades; besides, the military has long been separated from the "white terror". Take this year's (2016) military police searching case and Hung Chung Chiu case, 2013 as an example, the media use "martial law", "white terror" and other words to stir up people's emotion and hatred toward the ROC armed forces, so that lead to a low social status of the ROC armed forces.

On the other hand, the South Korean study, which has a background of military ruling, points out that a certain proportion of nationals who are discontented with the democratization of the state and to miss the dictatorship of the military, resulting in the social conditions of the so-called "Park Chunghee syndrome" (Moon, 2009; Kang, 2010). Although there is no such research in Taiwan to prove we have the same public opinion like that, once similar views have appeared (such as former president of the Executive Yuan Hao Baicun said "there is no democracy without martial law," and this year's presidential election candidate James Soong acclaimed " Shooting is acceptable during martial law, " and other discourse like these), the against sound flourished in newspapers and magazines; thus it is difficult to explore through media.

The ROC armed forces social status depends on whether the soldiers to fulfill the duties of their roles. The key words are: privates, sergeant, supervisors, officers, soldiers the military, and for the above keywords the research questions 4 presents as follow:

RQ4: What are factors about the "social status " aspect of the Internet evaluation?

5. The ROC armed forces morale

In the Chinese culture, the term "morale" refers to "the will to fight ". It was originally written in History of Han, volume fifty-four the autobiography of Li Guang. Whwn Li Ling, General Li Guang's grandson confronted 80,000 enemies on Junji mountain to fight Chanyu he said that: "Our troops lacks morale, and why it happened? " According to the context, the morale here is quite the same as that described above, the "fighting will" of the troops.

The Art of War describes the military morale as "It is the most vigorous in the morning, and in the afternoon and evening it becomes weaker and depressed." Therefore, when we commanding troops, we should do what is proper according to the circumstances, and considering about morale.

Morale, described by Clausewitz, should be discussed with the will. For Clausewitz, the war has its political purpose, and through practicing physical force then it would achieve the moral concept, and then destroy the enemy's will and actual warfare capability, and the former is more important (Cronin, 1985). Thus, the morale and will of our soldiers and

commanders are inextricable: the fighters must have the courage of both the spiritual and the physical, and understand the responsibility they have and to face the fear of war; and commanders must possess a certain military genius, rationally controlling emotions and military forces, exploring the actual situation of the battlefield and deepening the consciousness of their belief to fight, and effectively using force to disintegrate the enemy's will (Kleemeier , 2007).

Through the analysis the Chinese and Western military experts of what morale is, we found that Clausewitz has a more profound explanation of morale, while Sun Tzu only briefly mentioned morale by subjective measuring the situation of the enemy, and this result is because the different interpretation of war's purpose between them.

Ando (2008), McNeilly (2015) and Kang Jingbiao (2015) and others believe that both Sun Tzu and Clausewitz have a fundamental understanding of the "political purpose" of war, but Sun Tzu focuses on a comprehensive strategic layout, in which diplomacy is the basis of winning wars, that is, through the so-called " breaking the enemy's resistance without fighting" value to complete the political purpose; while Clausewitz, he emphasizes that wars inevitable through bloody conflicts and mutual destructions to achieve the political goal. Therefore, compared with Sun Tzu, Clausewitz had a relatively in-depth discourse about how to build morale and reach accordant belief with their commander's warfare will.

According to Clausewitz's theory of morale, morale not only focuses on the overall fighting will, but also the degree of identity for the political goal. However, to explore the purpose of the war at the national perspective, the military sociological should also be used as a measure to consider the civil-military relationship, which has the same factors of above-mentioned "social status".

In other words, war is not only the military affairs, but also has an intimate relationship with the nationals. Therefore, in addition to military morale during the war, the people will be influenced by the military and form the civilian morale, that is, during the operational period, the public's recognition of military action, can affect the front-line troops' fighting will (Ulio, 1941; Thornton, 1944). There are quantitative social science researches, aiming for two variables - behavior and attitude to construct the related indicators (Mackay, 2002), and there are some related research on the feedback of civilians during this period (Gregor, 2000; Jones, 2004; Johnson & Nichols, 2010).

However, military-civilian relations are not constant, as described in the paragraphs of "social status", in the post-cold-war era, especially in the Western countries, the military has transformed from the full-scale military conscription system to recruitment, as an occupational model described by Moskos (Dumas, 2009). This is not the only way to shape the military morale through moral values such as patriotism. In addition, with the military specialization and legalization, the main enemy is the non-traditional object (ie, warfare targets have changed from states to states to against particular force organizations, such as:

rebels, terrorists). Thus, the warfare morale to the military or the nationals, is bound to be more abstract and difficult to shape.

From this point of view, the morale is not limited to the military context, and the morale of the above discussion is "morale" during the war period. Due to the stratified military organization, emphasizing commanders and soldiers willpower and obedience when they facing difficulties, resulting in morale among the military is particularly important.

During the peace time, morale, as the psychologist Leighton (1949) argues, is a capability that enables a group of people to pursue common goals consistently, such as workplace morale (employee's overall assessment to their own mood, attitude, and work environment satisfaction) is one of the key areas of human resources, and it can be used as a decisive factor to evaluate business capacity (Baehr & Renck, 1958; Porter & Kramer, 2002), so the morale should be viewed as how does the modern military construct organizational identity, as what we discussed the "corporate image" of this chapter. It can from the military-civilian relations point of view, alienating differences between the military and people, and then shaping the recognition of the military, and assisting various tasks successfully.

In summary, morale refers to how do the military to form cohesion, conviction and characteristics, and a sense of identity, the key keywords are: do military service, honor, combat capability, team, and research question 5 is as follow:

RQ5: What are factors about the “morale " aspect of the Internet evaluation?

In conclusion, through examining the literature reviews, this study integrates four crucial indicators to evaluate the ROC armed forces, respectively, the image, social status, morale, and warfare, (Detailed analysis, see Figure 1), and then discussing differences among these indicators and constructing the overall assessment of the ROC armed forces.

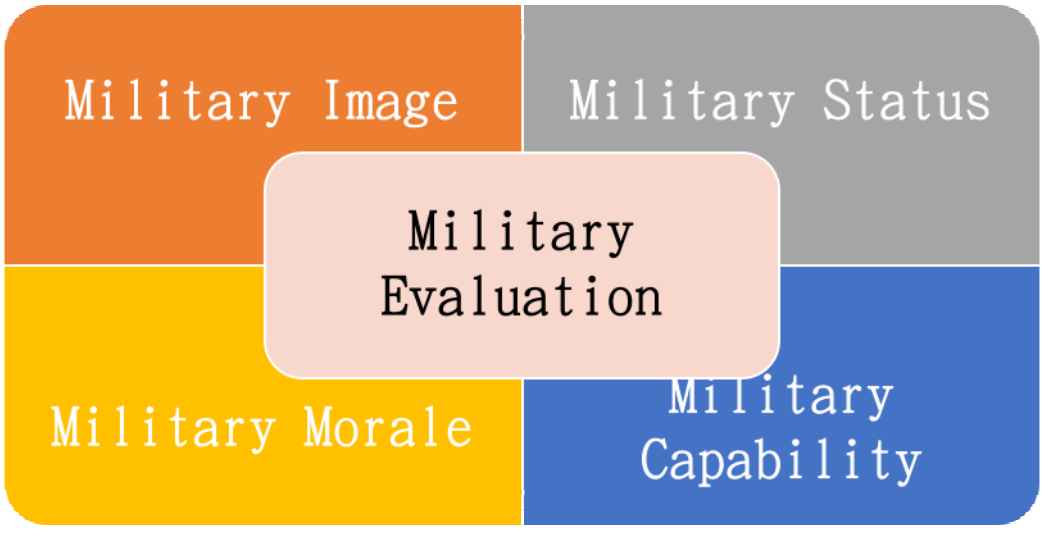


Fig-1: Dimensions of overall evaluation to ROC Armed Forces.

Research Methodology

1. Gathering public opinion related to the ROC armed forces

This study examines how do people evaluate our national military and how does public opinion format and diffuse, programs analyzed data by R programming language with " Social Event Radar " (SER)technological platform. The "SER" technic, invented by Information Industry, can automatically enforce web crawlers technology and combine with API publicly available concatenated data from sites/platforms, comparing, computing big data from various online community platforms instantly and automatically (Hsieh, Ku, Wu, & Chou, 2012). Types of observation platforms and community sites include a wide variety of forums, blogs, news sites, Facebook fan pages, PTT and public messages, etc. Through the keyword search, concept search, natural language and other semantic analysis to trace and analyze the trend of social hot events, the publics' preferences and behavior patterns. (Institute for Information Industry, 2016).

The study period begins around the case of Hung Chung Chiu (January 1 , 2013) happened and ends at the Hsiung Feng III missile mistakenly fires case (July 5, 2016). This period was selected to carefully examine the holistically national evaluation of the ROC Armed Forces on the aspects of military image, status, morale, and warfare capability. This study collects military-related public sentiments, a total 581,632 messages from the major domestic news sites, discussion forums, blogs, social websites up to 12,397 media fan pages and channels.

Through inspecting the main topics one by one, and analyzing important military related terms, we realized how these words influence national emotions and the spreading channels; besides, the effects of opinion leaders and messages mediators.

2. The collection and analysis of big data

The collection and analysis of big data gathering on the Internet can through the following five areas: (1) Facebook fan page list: Facebook Graph API approach was taken, according to the list of fan page setting (12,397 public fan pages and communities), checking the time and context, the volumes and feedbacks of messages leaving on the Facebook, types of reactions include "like", "comment", and "share". Besides the public information of reactors' ID can be collected. (2) The domestic media news sites and commends following by the news; (3) "PTT Bulletin Board"（Professional Technology Temple）, BBS station data. The latter two utilizing "web crawlers" mode, collect setting data from URL / web pages (4)

Twitter users' tweets and replies; (5) Forums site includes Dcard, Mobile 01, and Catino forum.

The current study selects the most suitable keywords filter "Term Frequency times Inverse Document Frequency"(TFIDF[1]) mode exploring the highest frequency military related terms such as "military, troops, armed forces, army, navy, air force, military police, marines, staff headquarters, "etc., as a rule on public opinion text crawling.

3. The process of collecting and analyzing the literature database

In this study, in addition to a huge amount of data collecting, we also analyzed emotions from peoples' discussions on the Internet and military-related issues. Several aspects of explanations are as follow:

(1) The method and scope of data collections

Military-related issues have wide scope, ranging from the discipline Incident, weapons procurement, internal management, personnel changes, to unit movement. Firstly, this study used "keyword filtering" to analyze contexts on SER technology platform, and then, download reactions and comments from the original social websites, news sites, discussion forums, or other media platforms.

(2) Analysis of the emotional messages

To understand the "tag" and "framework" which was used during events and elections, and speculate its emotions within texts, the present study uses JIEBA [2]Chinese word segmentation system that contains the whole data among posting messages, linking and reply contents, and this analysis combines National Taiwan University Sentiment Dictionary to preliminarily verdict (positive and negative) emotions. According to Ku & Chen (2007), Taiwan University Sentiment Dictionary, utilizing by the current study, when analyze specific polarized emotional words, F value reached a certain level, 62.16% and 74.37% respectively.

(3) The amount of volume analysis

But because the emerging language used on the Internet community is quite different from the traditional text, such as during the elections or the case of Zhou Ziyu, there are many emotional terms did not use in the past. The present study bases on NTUSD and "Term Frequency times Inverse Document Frequency" mode to verdict and select emotional

[1] TF-IDF is the abbreviation of Term Frequency times Inverse Document Frequency, and the measurement for the importance of a certain word to the document or the whole database (Ullman, Leskovec, & Rajaraman, 2011) .

[2] Segmentation system means using computer algorithms to segment Chinese texts into readable and meaningful segments, such as words, sentences, or paragraphs, which is helpful for semantics analyzing.

expressions, assisting by manual judgements especially for certain words that not included in the NTUSD, such as positive terms: characteristic of insisting principles, integrity.

(4) The amount of volume analysis

This study also refer to Facebook, Twitter, PTT, forum sites, and then decide to exploit EdgeRank algorithm giving press like, comment and share different weights among users' News Feed to present the disparate situations of contexts diffusions, on behalf of the articles' volume of the community.

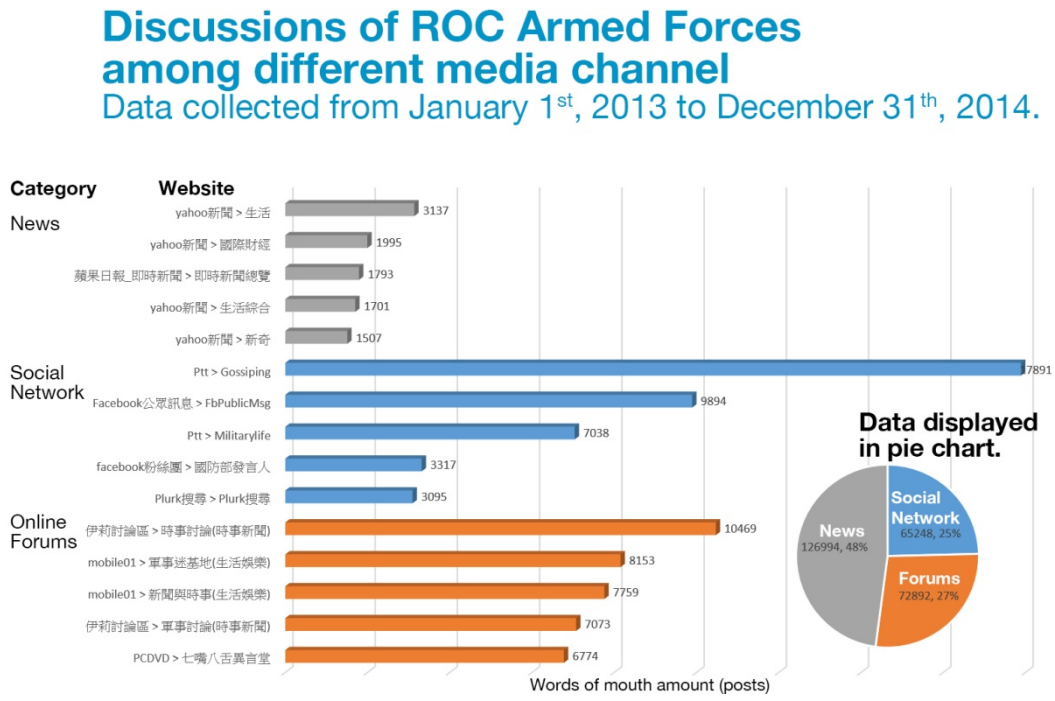
4. Research process

Comprehensive information of this study, including 12,397 fans pages, communities, news sites, discussion forums, which has issued any military related discussion, totally 581,632 articles and 98,333,633 replies in response to articles, from fully 6,800,324 unique ID account. During the information gathering time, there are 51,904,138 not repeat ID account in 289,376 fans pages / societies which can be regarded as a public response and willingness to participate in military-related matters who accounted for 52.2%.

Research results

RQ1: How do people talk about the ROC armed forces and defense related issues on the Internet? What are the main sources of information?

Analyzing of the public opinion of the ROC armed forces among the main channels, since 2014 the social networking fan sites which have been running by the news media are the mainstream media, the proportion of those fan sites is about 48% to 67%, mainly are Yahoo News and Apple Daily News, and then followed by the community website with PTT gossip and the military board, about 22% to 25%, Therefore, if the policy unit want to analyze public opinion, manage the military image and status, it should focus on the major community website ran by news media. (Detailed information analysis shown in Figure 2: the public military opinion channel distribution).



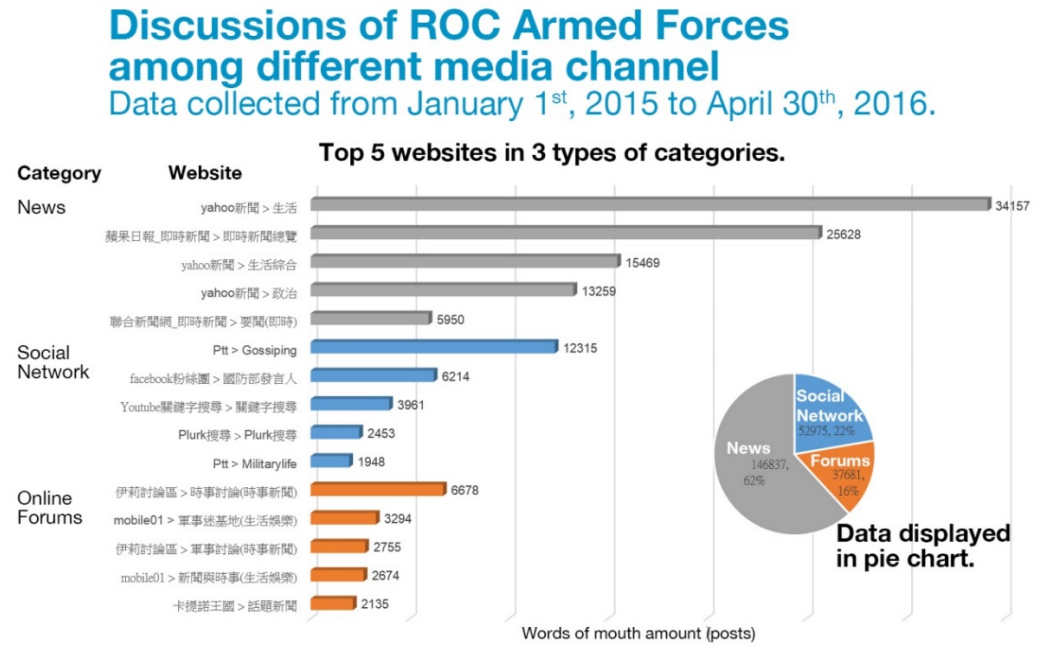


Fig-2: Discussions of ROC Armed Forces among different media

Through collecting and analyzing the ROC Armed Forces overall evaluation, this study examines the last three years' data to compare the change of public opinion, including people's supporting and interests to the military; and further explore the media resource and trends that formed public opinion; finally, generalizing the crucial aspects of people's expectations to the ROC military sector, through the analysis of warfare, image, status , morale and other public opinion responses, constructs the overall assessment of the ROC

armed forces and accordingly provides suggestions on policies.

In addition, the present study found that people began to develop a habit for using the fan page, running by news media, to discuss military-related affairs, the proportion of discussion volume rise from 48% to 62%, 2013-14 to 2015-16. Moreover, the monthly average discussion of military-related volume during 2015-16 is 11% higher than 2013-14. It is obvious that the public already deemed discussing the public policy on the Internet as one way to express themselves and participate in public affairs.

RQ2: What are factors about the "warfare" aspect of the Internet evaluation?

In the indicator of warfare, the keyword "training" got the maximum volume out of the other three, indicating that the training of ROC Armed Forces has already attracted high attention. Therefore, it can assume that media are more interested in the military training. From the comparison of positive and negative evaluations, we found that the keyword "training" had the best evaluation, implying that people think maintaining the warfare capability is a significant duty for soldiers.

From the analysis, we understand that a majority of people view PRC (People's Republic of China) as the imaginary enemy, and they question whether the training of ROC Armed Forces meets the ability to warfare. People consider that the military training schedule is susceptible to the public opinion; thus it is hard for the ROC Armed Forces to achieve the real warfare level, and people also view the ROC Armed Forces as lacking intangible warfare capabilities

The background is that because the political situation and economic trading between Taiwan and PRC is stable and frequent in the past eight years, it is difficult to focus on the intangible warfare capabilities and see PRC as our imaginary enemy. The international situation, like Dumas(2009) stated that by improving the economic relations between the two sides, building a new cooperation mode and diplomatic basis, and then stay optimistic about national security, is similar to the coopetition model between Taiwan and PRC.

The goal of training is to warfare; however, the volume of keyword "war", the common word represents the warfare, is merely 0.42 times to the volume of "training" and receiving a negative evaluation. It predicts that the majority of people presume the future war probability is not high, so the discussions about war is few; besides, the result also shows that people do not think the current military training can meet future operational needs. (Detailed information analysis shown in Figure3: the ROC armed forces warfare capability dimension evaluation).

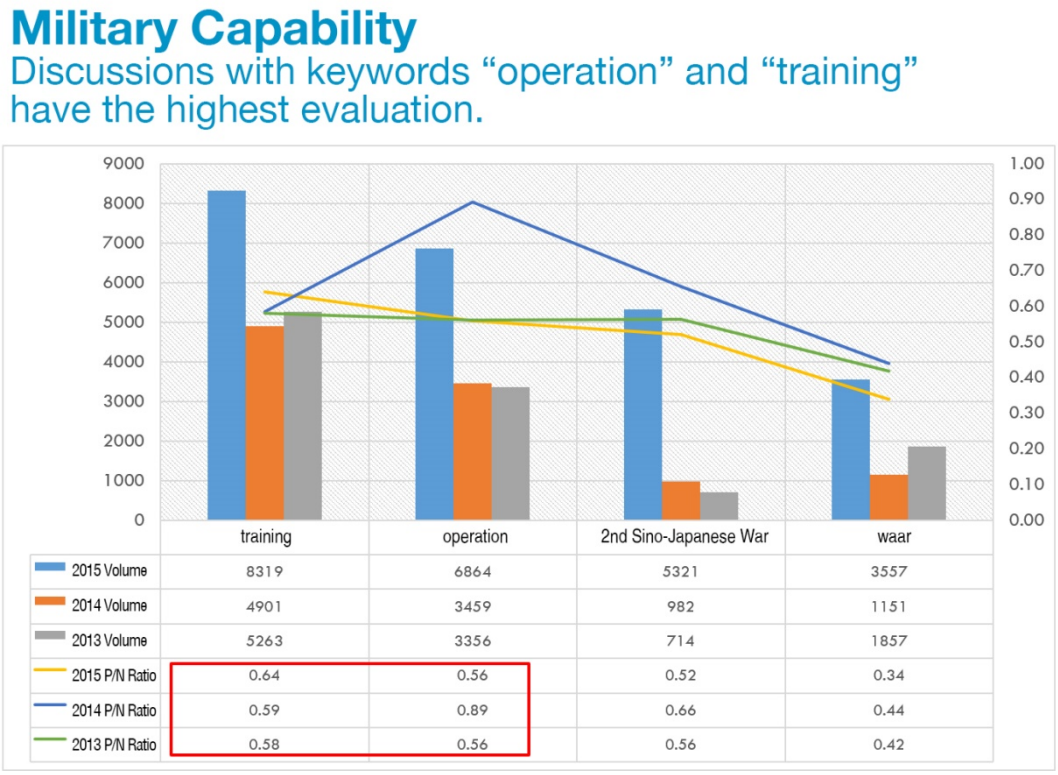


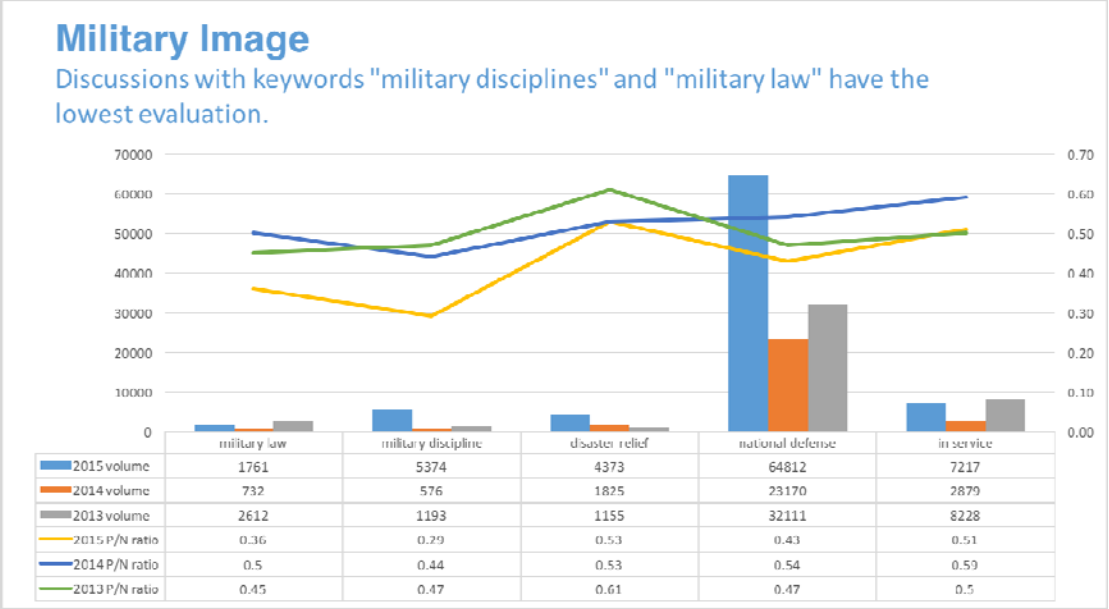
Fig-3: Military capability of ROC Armed Forces.

RQ3: What are factors about the "image" aspect of the Internet evaluation?

In the indicator of image, the keyword "defense" got the maximum volume out of the other three, indicating that defense is an inevitable term when people discuss about the ROC armed forces. To further elaborate other keywords, the evaluation of "in the military" is not obviously negative. Although the ROC armed forces is filled with tedious affairs and less freedom, but these are not the causes for the poor image in people’s mind.

The law military evaluation when searching keywords " military law ", " discipline " and public evaluation of discipline incidents such as the death of Hung Chung Chiu, the Apache case, and the Military Police searching case show discipline incidents seriously affected the evaluation of the overall image of the ROC armed forces. In other words, the results of the analysis infer that the negative image of the ROC armed forces does not form during soldiers’ serving period, but due to a single case of discipline incident.

Finally, the evaluation of "disaster relief" and "disaster rescue " although are relatively high, but not significant. From the analysis of the message replies, we know that people acclaim the disaster relief ability of ROC armed forces. However, the capability of disaster relief does not equal to the warfare capability, and then is not appropriate to connect the positive disaster relief image to the positive warfare ability. Therefore, the effect of disaster relief in shaping the positive military image is relatively short, and not a long-term appeal to build the ROC armed forces image.



	military law	military discipline	disaster relief	national defense	in service
2015 volume	1761	5374	4373	64812	7217
2014 volume	732	576	1825	23170	2879
2013 volume	2612	1193	1155	32111	8228
2015 P/N ratio	0.36	0.29	0.53	0.43	0.51
2014 P/N ratio	0.5	0.44	0.53	0.54	0.59
2013 P/N ratio	0.45	0.47	0.61	0.47	0.5

Fig-4: Military image of ROC Armed Forces.

RQ4: What are factors about the " Social status " aspect of the Internet evaluation?

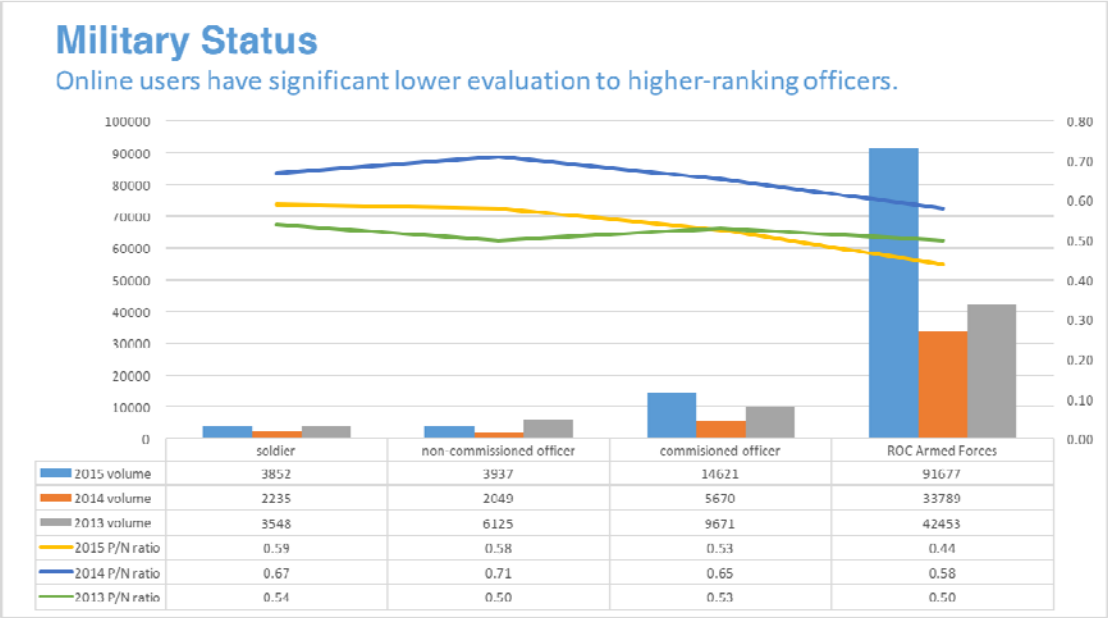
In terms of status indicators, the evaluation（P／N） of the keyword "soldier" is higher than that of "sergeant", and the value of " sergeant " is higher than that of "military officer". Showing that the degree of people's positive emotional evaluation has the inverse relationship to the military rank; therefore, among the evaluations of the keywords, " supervisor " is lower than " soldier ", "sergeant", and " officer ".

It predicts that because the majority of people serving in the ROC armed forces are mandatory soldiers, they have a sense of identity to the low-rank soldiers; in contrast, they tend to think some officers might treat their subordinates inappropriately; besides, low-rank soldiers are always in the battlefront instead of higher rank officers, so people have a negative attitude toward the higher-rank officer. To discuss the term military status, we should also consider our history background. Taiwan have been through national security for nearly 38, and inevitably formed class antagonisms and conflicts. Thus, according to this context, military rank and its status have a conversely relationship.

In addition to the historical background, the overall cultural context also contributed to the conversely relationship between military rank and its status. As Lin Qun (2016) stated, Confucius' cultural implies a scathing moral standard for individuals to follow as a "gentleman", accordingly a more stringent standard is expected for the military, government officers, and teachers whose salary are rely on the tax. This Confucius' culture leads to a higher demand for officers, lower demand for soldiers.

From the evaluations of the terms "the ROC armed forces" and " national army " which are lower than " soldier ", "sergeant", and " officer ", we know that when people refer to "the

ROC armed forces" or " national army ", the articles usually contained occupations and social status, considering the status of the ROC armed forces is inferior to other occupations. (Detailed information analysis shown in Figure5: Military status evaluation dimension analysis).



	soldier	non-commissioned officer	commisioned officer	ROC Armed Forces
2015 volume	3852	3937	14621	91677
2014 volume	2235	2049	5670	33789
2013 volume	3548	6125	9671	42453
2015 P/N ratio	0.59	0.58	0.53	0.44
2014 P/N ratio	0.67	0.71	0.65	0.58
2013 P/N ratio	0.54	0.50	0.53	0.50

Fig-5: Military social status of ROC Armed Forces.

RQ5: What are factors about the " morale " aspect of the Internet evaluation?

In the indicator of morale, the general evaluation value (P / N) of the articles related to the morale is high, indicating that people have a positive attitude toward the military honor and teamwork. The keyword "team" got the highest evaluation among other morale indicators which means that people acclaim the advantages and performances of militaries' teamwork, disaster relief ability and military exercises.

The value of the keyword "honor" is higher than 0.7, obviously implies that when people discuss the article related to honor which mostly have a strong emotional connection between the military morale and nation, the evaluation is positive.

The evaluation of " warfare capability" is slightly lower than the former two, when people talk about articles related to the warfare power, they have both positive and negative attitude, some people believe that our army has enough warfare capability to resist foreign enemies, while some people doubt militaries' warfare power, and they do not believe the militaries' weapons, equipment or professional skills.

The volume of public's concern about the "military service" is the highest, while the evaluation is the lowest. It represents that the public concern about "do mandatory military service" or "drafted into the army", but have negative attitude, generally viewing military

service is time and energy consuming. Comprehensively looking at the positive and negative evaluation of keywords, people tend to have negative emotions toward their own military service experience, but affirmed the performance of the militaries' teamwork spirit and honor. However, People failed to combine their personal military service experience to enhancing the ROC armed forces morale.

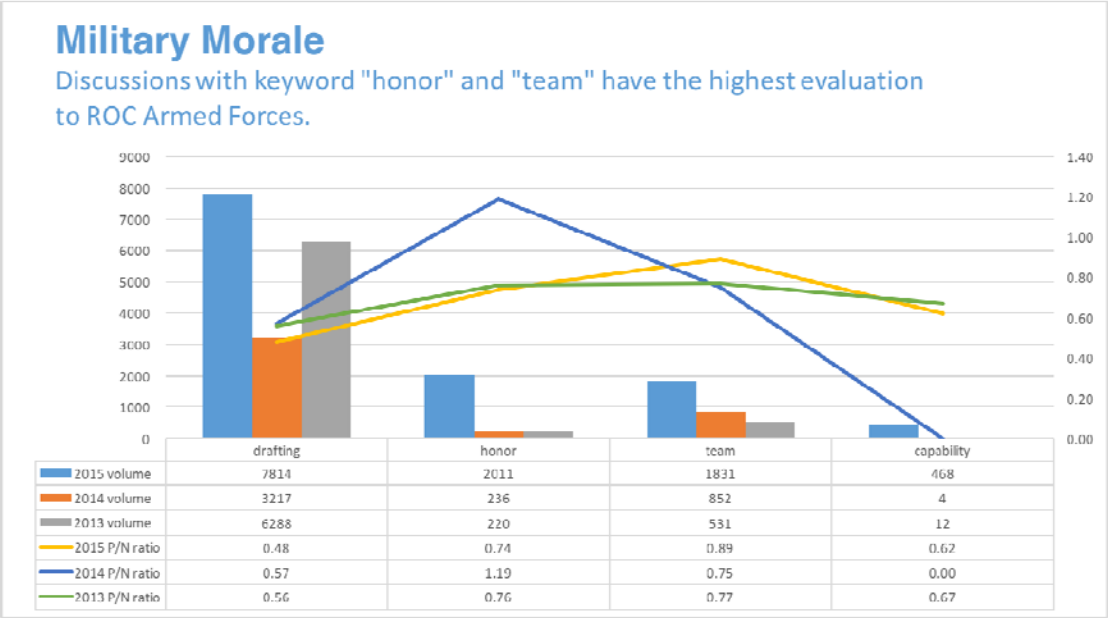
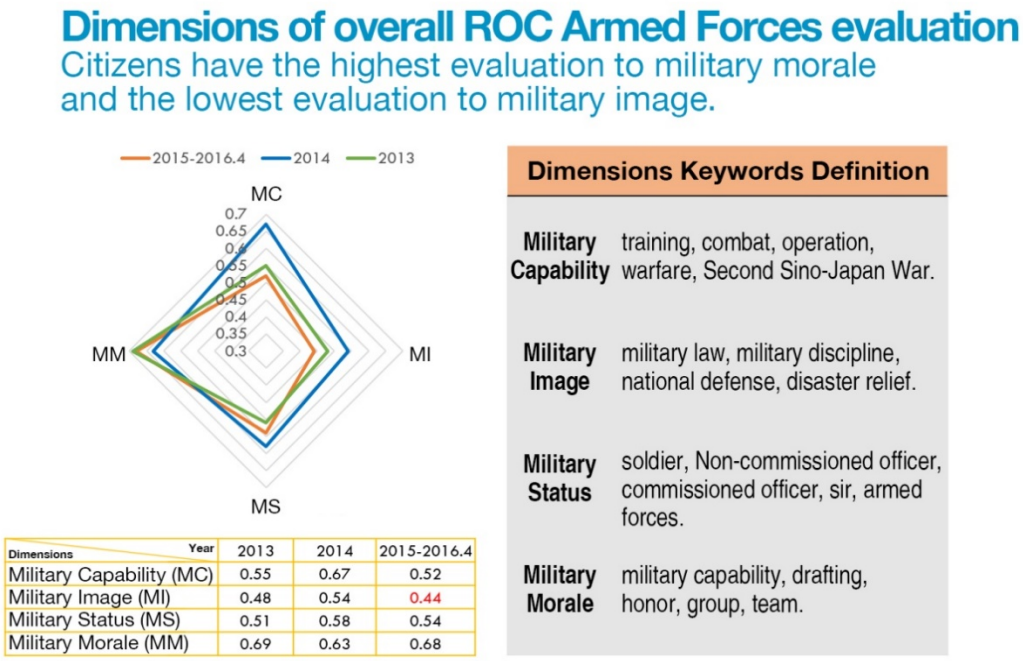


Fig-6: Military morale of ROC Armed Forces.

Overall analysis shows that, since 2013, when people talking about the morale of the military, a higher degree of satisfaction was discussed; instead, overall image has the relatively lower evaluation out of four instructors. The most possibly reason is that the image aspect contains the evaluation of the military law and the military discipline. Thus, the conclusion is that the ROC Armed Forces has a poor image due to the significant relation with the high frequency of discipline incidents and the low evaluation of military law. (Detailed information analysis shown in Figure7: analysis of the overall evaluation of the ROC Armed Forces).



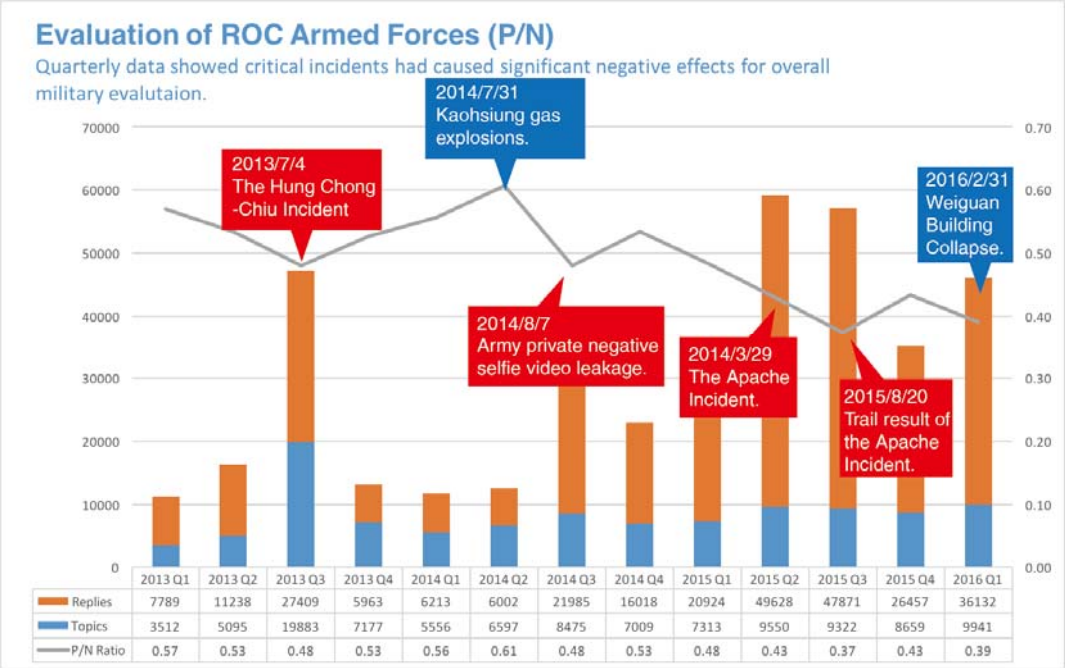
Dimensions \ Year	2013	2014	2015-2016.4
Military Capability (MC)	0.55	0.67	0.52
Military Image (MI)	0.48	0.54	0.44
Military Status (MS)	0.51	0.58	0.54
Military Morale (MM)	0.69	0.63	0.68

Fig-7: Dimensions of overall evaluation to ROC Armed Forces and dimensional keywords.

Scrutinizing the military-related public opinion from 2013 to 2016 (higher P / N value represents the more positive evaluation). When the Hung Chung Chiu case in 2013, the Apache case in 2015 happened, the militaries ' overall evaluation decreased by 45%. It is noteworthy that the evaluation of the ROC Armed Forces will go back to the normal level about 1-2 months later. Similar phenomena also occurred in disaster relief missions. When the disaster relief missions including Kaohsiung gas explosion in 2014, Tainan Weiguan building relief operation in 2015 enforced, the evaluation of the ROC armed forces increased by 25-35%, and go back to the normal level about 1 month later. In summary, the occasional military discipline incidents and major disaster relief missions influence people's attitude about the ROC armed forces in the short term instead of long term. (Detailed information analysis shown in Figure 8: the ROC armed forces evaluation (P / N), and the volume trend).

Another noteworthy viewpoint is the change of public opinion in the online community. The present study found that when important events happened, whether negative military events or positive relief mission, the number of feedback people reflected, far more than the number of news reports. In other words, from promoting publications to implementing practical missions, the key factor to improve the militaries' overall image and status is to attract people's active concern and discussion.

Fig-8:



Biyearly-displayed tendency changes of evaluation to ROC Armed Forces.

Case Study--applications of social networking in Taiwain Morakot typhoon disaster

During August 8th to 10th 2009, typhoon Morakot, a medium scale tropical cyclone, wrought catastrophic damage in Taiwan, affecting a large portion of Southern Taiwan and leaving over 600 people dead, 76 missing and 24,950 people displaced. Typhoon Morakot ruined more bridges and roads than the disastrous earthquake of September 21, 1999. The accumulated rainfalls in parts of southern Taiwan reached 2866 mm, breaking the Central Bureau of Weather's historic record. This storm was the deadliest typhoon to impact Taiwan in the last 50 years and even now the economic loss is difficult to estimate.

The night of August 8th, typhoon Morakot caused historical record levels of rainfall in Southern Taiwan. Web users began reporting the real-time situation on the forum PTT http://pttemergency.pixnet.net/blog, one of the most popular internet social networks in

Taiwan. PTT is a bulletin board system with more than 1.2 million registered users and an average 10,000 users online simultaneously. On August 9th, an unofficial Morakot Online Disaster Report Center was established by a group of internet users from the Association of Digital Culture Taiwan http://typhoon.adct.org.tw/. They advised fellow internet users living near areas battered by the storms to gather information, such as sustained damage or assistance needed on popular social networking websites including Twitter http://twitter.com/TaiwanFloods or Plurk http://www.plurk.com/floods. This website was then integrated into local governments' communication systems on August 10 and updated from the official disaster response center. Some users hosted Google maps on which residents who were waiting for rescuing could overlay information such as their current location and, the latest situation of damage caused by severe rainfall and landslide http://www.google.com.tw/intl/zh-TW/landing/morakot/. Plurk and Twitter users also sent messages to help rescuers acquire accurate position for their family and friends who live in affected areas.

In the initial stage of this typhoon disaster, major response operations were not coordinated efficiently. During the most crucial first few hours after the catastrophe, the Central Response Center underestimated the early scope and gravity of the disaster due to the lack of information and communication from affected areas. Official government communication early in the crisis failed, causing people to turn to websites run by non-governmental organizations, local media and individuals for information. For instance, when traditional emergency reporting systems in Tainan County were overloaded, people instead reported the first aid need directly on the Tainan Commissioner's Plurk. By using microblogging to compile data, local emergency medical system workers had successfully rescued 14 trapped people by the second day of typhoon Morakot.

In addition to these examples, Web 2.0 social networking also serves as a platform in resource gathering, logistics allocation and the distribution of relief supplies. Volunteering was another activity promoted through social networking services observed during typhoon Morakot. The social networking services were used to spread the news on volunteering opportunities and to match the users and volunteers to the time and location of need http://morakot.yam.com/.

Fundamentally, the goals/tasks of disaster management conducted by public health workers include:

(1) Preventing unnecessary morbidity, mortality and economic loss resulting directly from a disaster.

(2) Mitigating morbidity, mortality and economic loss due to the mismanagement of disaster relief efforts.

Therefore, the first priority is to understand the nature of disasters, and through this understanding, we identify the public health problems. Thus, collection, interpretation and dissemination of accurate and timely data from affected areas become necessary during and after the major disasters.

For public health workers and emergency responders, one of the most significant benefits of ISN is the speed to construct a network of professionals around practical, realistic common interests and objectives rather than around traditional bureaucratic structures. The non-hierarchical two-way communication system provided by most Web 2.0 social networks also empowers public users to participate in policy discussions with feedback to influence policy making.

The capacity of current emergency telephone and official communication system in Taiwan was drastically insufficient during the Morakot disaster. For example, the government was unaware of hundreds of survivors in mountainous areas of Kaohsiung County until informed by the news media. The primary reason that the information systems failed is not simply due to the difficult environment that the disaster created or its own internal limitations but rather, inadequate organizational capacity associated with a lack of support and oversight. The 911 emergency telephone system is not designed for disasters which resulted in difficulty in prioritizing or triaging the thousands of incoming calls. A good emergency communication system should be trustworthy, scalable, dependable, and reliable. When people are faced with uncertainty and lacking full knowledge of the risk, they will look to trusted sources of information for guidance.

Community response grids and microblogging can help reduce the gaps between residents and professional emergency rescuers in providing direct information during emergencies and understanding the severity and breadth of major disasters. The technologies provide an online environment for information sharing and tracking. Used properly, microblogging can be a valuable component in an overall communication strategy. It is important to note that Twitter and other similar tools run on two-way communication which helps victims and professional emergency responders build relationships and share timely and important information directly with those in immediate need.

The world of disaster communications has been completely transformed in the last five years. The explosion in Internet and social media tools, in new technologies and applications, and in public access to information instantly through smartphones and tablets has changed the way news is gathered, distributed, and used. It has also blurred the lines between the reporter and the audience, between the disaster agency and the public.

So the question is not whether but how best to use social media, including Twitter, Facebook , YouTube, Pinterest, and Tumblr now that these and other social media have proven their value as go-to tools in emergencies. With every disaster, dependence on and the

use of social media has increased. From the use of Twitter as a newswire and Facebook for distress calls to mobile apps that direct people to shelters, food, and fuel, social media has become a big part of disaster response and recovery and is on track to become an even bigger element in disaster communications and coverage in the future.

Conclusions& Implications

Conclusion

After examining over 580,000 prices of online post, we can find the P / N value differences in the four keywords: warfare, image, status, morale as follows:

In terms of warfare, the P / N value and the volume of "training" are far greater than those of "fighting" and "combating". That is to say, the training process is more positive to netizens, but they cast a doubt on the probability of future wars.

On the image side, the P / N values of the keywords of "military discipline" and "military law" are both low, and it can be attributed to a number of major military disciplinary cases had happened during the sampling period. In addition, the P / N value of "disaster relief" is high, but the volume is limited, so for constructing the ROC Armed Forces image, the effects caused by disaster relieving is confined and difficult to continue.

In terms of social status, the P / N value of rank-related keywords is inversely proportional to the status, that is, those of the lower rank (for example, compulsory soldiers) are higher than those of the officers or supervisors. In keywords the "military" and "national army", showing a high volume of the low P / N value, indicating the negative stereotypes to the ROC armed forces.

In terms of morale, the P / N value of the keyword "team" is much higher than the others, so it shows that netizens are satisfied with the team cooperation of the army, while the keyword "do mandatory military service", having a high volume of the low P / N value, indicating the negative attitude toward the compulsory serving.

Finally, among the four indicators in this study, the P / N value of "morale" is the highest and the "image" is the lowest. We consider that two major military cases, " the Hung Chung Chiu case " and the "Apache incident" happened during the sampling period, resulting in a number of negative evaluations of the ROC armed forces. In sum, this study proposed the following suggestions as follows:

1. Focusing on military training and exercises

From the long-term data trends, the program found that most of Taiwanese hold positive evaluation on disaster relief mission, however, the levels of evaluations showed a dramatic ups and downs in the pattern. On the other words, obviating the special circumstances of disaster relief, we can find that people's evaluation of the overall image, status, morale and warfare of the ROC armed forces is high when it related to the war training and missions. This phenomenon also represents the expectation and core value of national defense policies.

That is, through the analysis of big data we found that the fundamental way to enhance the evolution is to focus on war training and missions. Besides, it is also helpful to improve the recruiting significantly.

2. Constructing the mechanism of monitoring public opinions by big data analysis

Construct the mechanism of monitoring public opinions by big data analysis, through collecting of the major news media websites, Facebook fan pages and App immediately and comprehensively to establish a response mechanism, concerned about the volume of military issues. Before the issue has not yet extended, predicting the scope and hotspot of the topic, notify the processor in advance to clarify the keynote and response to avoid the negative influence, and to provide the information needed for the community page initiatively to post positive information to the major sites and community media, to strengthen people's confidence and consolidate their supporting in the ROC armed forces.

3. Exerting the political warfare capabilities

Exerting the political warfare capabilities, including building a productive relationships with stakeholders, media, and opinion leaders on defense policies to establish the networks of response-in-time mechanism, applying to disabusing the military related questions of the public, at the same time to spread positive information, maintain positive discussions, and even suppress the negative volume growth on the websites. It is proposed to increase the channels and intensify the ability of the official community to influence the news media in order to avoid the loss of the agenda-setting ability, improve the strength of links, and to maintain the ability to set up leading issues and to effectively guide the media coverage.

4. Monitoring public opinion in a longitudinal base, adjust the promotion strategy accurately

Mainstream public opinion on the expectations, evaluation and views about the military keeps changing. The opinion of the public opinion on the ROC armed forces is the key factor to impact of the status and image of the ROC military. Calculation by big data and continuously understand the public opinion on the cognition of core values change of the ROC armed forces continuously. And according to this observation to adjust and assess the promotion programs.

Through the cooperation between industry and academia, controlling public opinion in the long run, and adjusting the promotion strategy accurately, so as to meet the expectation of public opinion. In addition to directly improving the image of the ROC Armed Forces, it also has a decisive influence on the effectiveness of the "improved recruiting system". When it comes to do military service, the three main factors for Taiwan's youths include the expectations to the ROC armed forces in the future, the attitude of their parents and peers, and social atmosphere. The exertion of big data analysis lead to both develop the precision promotion strategy and enhance the probability of the military service participation.

Implications

A successful disaster communications strategy is built on a set of basic principles that ensure that emergency managers effectively communicate with their customers and partners in all four phases of emergency management—mitigation, preparedness, response, and recovery. These principles provide guidance to emergency managers and other officials involved in emergency operations and programs on how to talk to their customers, how to ensure that they can talk to their customers, what to say and what not to say, how to be accurate and timely, when to talk, and how to connect to their customers when you talk.

According to the results of big data analysis which provided empirical evidences on how people think about Taiwan military sector on disaster relief. The program integrated case study on typhoon relief mission to elaborate crisis communication policy strategies as below:

(1)Understanding What Information Customers Need

In a response scenario, important information includes how and where to get assistance, what are the responders doing, where is it safe and where is it unsafe, how long before people can return to their communities and their homes, how to locate missing relatives, etc. Critical information before an event occurs may include evacuation or shelter-in-place orders, locations of shelters, etc. Preparedness messages may include how to protect your home or business, how to create a family plan, how to work with others in your community such as Citizen Corps Councils, etc. Mitigation messages may include how to assess your vulnerability, what can be done to reduce your vulnerability, how to access resources in order to take action, etc.

(2)Use Language That Most People Can Understand and Trusted

In talking to the public directly or through the media, do not use jargon or acronyms that most people would never understand. Do not use pronouns extensively. Clearly identify individuals and organizations that you are talking about. In preparing preparedness and mitigation materials, use easily accessible language that makes it clear what actions you want individuals to take. There is academic and scientific research available to help in developing these materials so that your customers will understand them.

Your messages may be ignored in some neighborhoods where the residents are suspicious of government authorities. Identify and recruit trusted community leaders in these neighborhoods to carry your messages to the residents and to provide you with information from the neighborhood before, during, and after a disaster. Examples of trusted community leaders include local church leaders, community activists, school officials, and local business leaders.

(3)Use the Appropriate Media to Reach Your Customers

Television remains the most effective and efficient means for reaching the largest segment of a community’s population. However, some people get their information from the

radio and a growing number from the Internet. Older citizens are more likely to read newspapers than students who are getting their information from Twitter and Facebook. Understand the media preferences of your customers and plan your communications programs accordingly.

(4) Be an Active Participant in Communications

A good measure of leadership commitment to communications is the active participation of the leadership in planning and executing the communications strategy including being the principal agency spokesperson during disaster response and recovery, being directly involved in designing and implementing preparedness and mitigation awareness campaigns, and working with elected officials in communicating with the public.

(5)Include Communications Director on Senior Management Team

The communications director should be involved in all planning and operational meetings and decisions. Membership on the senior management team ensures that communications issues are raised and considered by senior management and that the communications aspects of any plan, operation, or action are developed and agreed upon by the senior management team. This makes it clear to all staff that communications is a leadership priority.

(6)Bring Communications Professionals to the Table

Include communications professionals on planning and operations teams that traditionally include logistics, legal, support, and first responder staff.

(7)Develop Communication Strategies to Support Operations

In anticipation of the communications demands in a response and recovery scenario, develop a strategy to deliver timely and accurate information to the public that includes creating mechanisms to provide regular media updates, collect and disseminate facts and stories, respond to media inquiries, provide access to the disaster site for the media, make response and recovery officials available to the media and, when appropriate, deliver preparedness and mitigation messages concerning future disasters. This strategy should also identify how to use the Internet and new media to support response and recovery communications.

(8)Focus on Performance and Make Information a Priority

When talking to the media and the public, focus on what your organization is doing, what it has done, and what it hopes to do in the future to meet the needs of its customers. Examples of such performance-based statements include: Initiate and make progress on debris removal; create a Twitter hashtag or set up a 1-800 number for information and to register for assistance; coordinate with voluntary agencies to set up shelters and deliver immediate assistance; update damage assessments.

Having a clear understanding of the situation on the ground in a disaster response or understanding what people need to know to take action to prepare for the next disaster are

examples of how important good information is to effective communications. Collecting, analyzing, and disseminating information should be a top priority of an emergency management organization.

(9)Conduct Regular Updates

Establish a schedule of updates with all audiences that allow you to share information. This will make you a consistent presence in the eyes of the media and the public and ensure that all parties remain informed. Conduct these regular updates even if you have no new information. Use the time to promote preparedness and mitigation messages as well as to assure all parties that you and your organization remain on top of the situation. Official briefings in Boston after the Boston marathon bombings is a good example of public officials regularly briefing the media and the public through both traditional and social media outlets. The types of media outlets an emergency manager should provide regular updates to include television, radio, newspapers, Twitter, Facebook, websites, and blogs.

(10)Make the Incident Commander Available to the Media

The incident commander is another commanding presence in a disaster response and you should be comfortable with that person's communications skills to make him or her available to the media. This person should be well briefed and should be perceived as a credible source of information on response activities.

(11)Be the Central Information Source

Establish your organization as the source of information on the disaster response or awareness campaign. Have the facts, statistics, and story lines available that the media need to communicate to the public. This is the best way to control the flow of information, manage expectations, and ensure that you can define how your department functions in a crisis. If the emergency management department does not become the source of information, who will assume that role in a crisis? Politicians? The media? Individual citizens? Other government agencies?

(12)Work with All Media—Traditional and Social

The media remains the most effective and cost-efficient means for communicating emergency management information and messages to the public. Do not exclude one form of media in favor of another for any reason. Work with all media, traditional and social, in order to maximize your reach to the public. Increasingly, traditional and social media are setting up their own partnerships in recognition of the value of the information and images new media adds to the narrative. Do not be left out of that information exchange.

Just as the media world is changing dramatically, the world of emergency management is also changing rapidly. The onslaught of major catastrophic disasters around the world and

the projected impact of global climate change have forced the emergency management community to reexamine all of its processes, including communications.

Managing information before, during, and after a disaster has changed significantly in recent years and emergency operations at all levels—local, state, and national—must recognize and acknowledge this change and adapt accordingly.

The changing shape of emergency management in the coming years will demand that communications play a larger role in all emergency operations and programming. Incorporating digital and social media forms and functions into communications plans and strategies and adapting to new technologies will be the order of the day for all emergency management agencies. Emergency officials can no longer avoid communicating with the media and the public. Emergency agencies must accept the expanded role of communications in all four phases of emergency management and embrace it as a valuable tool in meeting the needs of the public.

Limitation and future research

Finally, this study is the first one that uses the big data and semantic analysis as the research avenue in the military social science research at this stage, and this model can provide reference for future research and be applied to more detailed variables.

However, this research method is also a review of this research. The original data of this study are all from the Internet. The "public opinion" indicators constructed from these data are only limited to those who are accustomed to using the Internet. (Boyd & Crawford, 2012) Although it has a certain degree of precision, it cannot be used for public relations comprehensively.

In addition, as described by Schenker (2013), big data are timely and predictive, but how to judge the quality of the original data and customize it would depend on manual processing. According to this, in order to develop the data analysis model of this study, we should continue to cultivate the relevant technical staff, familiar with the relevant system operation.

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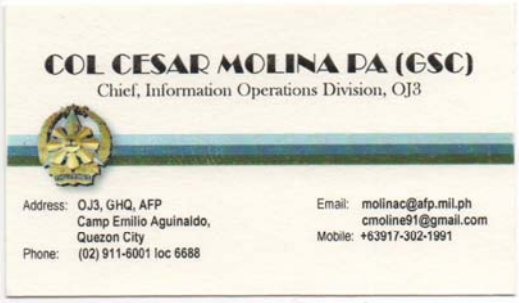
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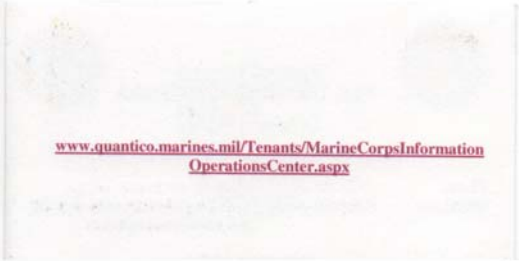
www.quantico.marines.mil/Tenants/MarineCorpsInformationOperationsCenter.aspx

附錄四

PACOM & intro with D-TA Systems

Tuhin Das <tdas@d-ta.com>
寄給 我

11月17日

英文 › 中文（繁體） 翻譯郵件 關閉下列語言的翻譯功能：英文

Dear Professor Wen-Cheng Fu:

It was a pleasure meeting you at last week's PACOM AOC show. Hope you had a safe flight back home.

To recap, we met at the networking session on Tuesday where we exchanged business cards. I work for D-TA Systems, we were one of the PACOM sponsors and also had a booth.

I have attached our most up-to-date brochure for your review. It will give you an idea of our various systems, their form factors, and the types of applications they can be used for. We are very interested in working with Taiwan and showcase our products. We have a lot of experience working with Taiwan in the past. I am hoping to continue this discussion with you.

Also, I would greatly appreciate if you can email forward this email to Major General Yu, Tsung-Chi. I have his business card, but do not have his email address.

Look forward to hearing from you.

Best Regards,

Tuhin Das
Business Operations Manager
D-TA Systems Inc.

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D-TA AT A GLA...