NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

HUMAN CAPITAL MANAGEMENT THROUGH THE USE
OF A STANDARD INTEGRATED PERSONNEL SYSTEM
IN ROYAL SAUDI NAVAL FORCES

by

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March 2013

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REPORT DOCUMENTATION PAGE		*Form Approved OMB No. 0704-0188*

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE March 2013	3. REPORT TYPE AND DATES COVERED Master's Thesis	
4. TITLE AND SUBTITLE HUMAN CAPITAL MANAGEMENT THROUGH THE USE OF A STANDARD INTEGRATED PERSONNEL SYSTEM IN ROYAL SAUDI NAVAL FORCES		**5. FUNDING NUMBERS**	
6. AUTHOR(S) Abdullah A. Benghaith			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000		**8. PERFORMING ORGANIZATION REPORT NUMBER**	
9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A		**10. SPONSORING/MONITORING AGENCY REPORT NUMBER**	

11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government. IRB Protocol number ____N/A____.

12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release, distribution is unlimited	12b. DISTRIBUTION CODE

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The Royal Saudi Naval Forces (RSNF) is continuously searching for a better means to manage manpower and personnel. The RSNF Manpower Department is currently studying the available methods and procedures that will ensure a stable leverage of human capital. The study also examines knowledge levels to support optimal information technology management.

The research initially examined the background of the evolution of the Kingdom of Saudi Arabia and its armed forces. This thesis illustrates the current status of the human capital management system in the Royal Saudi Naval Forces and presents the common human capital management systems used in both military and civilian organizations around the globe. It also evaluates these systems' features and characteristics. The thesis presents the requirements a new system must have in a given practical and technological environments. Finally, it addresses the expected results that the RSNF will gain after an appropriate new system is acquired. Additionally the research recommends a review of the current Royal Saudi Naval Forces manpower and personnel organization to better support short and long term organizational planning objectives.

14. SUBJECT TERMS Manpower, Kingdom of Saudi Arabia, Human resources, Knowledge management, Personnel management, Human resources management system, Royal Saudi Naval Forces, Human capital	**15. NUMBER OF PAGES** 67
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UU

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. 239-18

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Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

**NAVAL POSTGRADUATE SCHOOL
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LIST OF ACRONYMS AND ABBREVIATIONS

AM	Application Management
APMRS	Automated Personnel Management Reporting System
APO	Advanced Planning Optimizer
ASP	Application Service Provider
BI	Business Intelligence
C4I	Command, Control, Communications, Computer, and Intelligence
CIA	Central Intelligence Agency
COMPASS	Computerized Provisioning, Allowance, and Supply System
CRM	Customer Relationship Management
DOD	Department of Defense
DP	Demand Planning
EIS	Employee Information System
ERP	Enterprise Resource Planning
ESR	Electronic Service Record
GATP	Global Available to Promise
HCM	Human Capital management
HRIS	Human Resources Information System
HRM	Human Resources Management
HRMS	Human Resources Management System
IT	Information Technology
KM	Knowledge Management
KMS	Knowledge Management System
MHC	Costal Mine Hunter
MOD	Ministry Of Defense
MSC	Coastal Mine Sweeper
NLP	Natural Language Programming
NSIPS	Navy Standard Integrated Personnel System
OAS	Office Automation System
PCG	Patrol-Chaser Missile Craft
PDS	Personnel Data System

PGG	Patrol-Gunboats Guided Missile
PKI	Public-Key Infrastructure
PM	Performance Management
PP/DS	Production Planning & Detailed Scheduling
R&D	Research and Development
RFI	Request for Information
RSNF	Royal Saudi Naval Forces
SAAR	System Access Authorization Request
SABIC	Saudi Basic Industries Corporation
SCM	Supply Chain Management
SMBs	Small and Medium-sized Businesses
SNEP	Saudi Navy Expansion Program
SNP	Supply Network Planning
SOO	Statement of Objectives
USN	United Sates Navy

ACKNOWLEDGMENTS

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I.   INTRODUCTION

A.   BACKGROUND

In all professions, careers, businesses, and jobs—without exception—the human component is considered the most important and costly factor. The primary reason for its importance is humans' ability to learn. .The human component of any system possesses the ability to provide a high rate of return to the organization. This is possible if the organization can codify the skills on learning transferred by means of education and training. As personnel perform a multiple of tasks and subsequent position in a career category, may their experience make good economy sense? For all of these reasons, the human component must be managed effectively for businesses to achieve the highest possible return. The human component is not only labor or merely a number of workers; the term "human capital" has become widely used to describe the work force and all the assets that it possesses. Gary S. Becker first used the phrase "human capital" in *Human Capital: A Theoretical and Empirical Analysis* in 1964.

> Yet the evidence is now quite strong of a close link between investments in human capital and growth. Since human capital is embodied knowledge and skills, and economic development depend on advances in technological and scientific knowledge, development presumably depends on accumulation of human capital. (Becker 324)

B.   HUMAN CAPITAL MANAGEMENT

Describing the workforce as human capital clearly references the disciplines of economics and management science. The word "human" illustrates the need for control through a management framework, while "capital" shows its high value which requires knowledge of the surrounding economic conditions. Human capital management is simply a direct management approach to increase the efficiency of an organization. Determining the fair value of human capital requires a method different than financial accounting, and here the role of active management comes into play. A necessary clarification to mention is that a reader familiar with developments in the management

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field will realize that human resources management (HRM) and human capital management (HCM) do not have large differences in terms of performance and implementation.

The definitions of terms used for both HCM and HRM illustrate their close relationship. Human capital is defined as the knowledge, skills, attitudes, and intellectual agility of employees (Roos 23). Another definition which stresses on the measurement dimensions of HCM describes Human Capital (HC) as the accumulation of knowledge, skills, experience, and other relevant workforce attributes (Nalbantian 268). I personally prefer the latter definition, because human capital represents the human factor in an organization, the combined intelligence, skills, and expertise that create its distinctive character. The human elements of an organization are those that are capable of learning, changing, innovating, and providing the creative thrust which, if properly directed, can ensure the organization's long-term survival (Bontis 628).

John Storey, who is interested in the human resources management field and has written several books about it, issued two definitions for HRM. In the first definition, HRM is an approach to labor management which treats labor as a valued asset, not as a variable cost, and consequently counsels investment in labor resources through training, development, and measures designed to attract and retain a committed workforce. The second definition holds that HRM is a distinctive approach to employment management that seeks to gain a competitive advantage through the strategic deployment of a highly committed, capable workforce, using an integrated array of cultural, structural and personnel techniques (Storey 10). Michael Armstrong, the author of Handbook *of Human Resource Management Practice* created a wonderful definition of HRM that also illustrates the importance of human capital. According to Armstrong, HRM is a coherent, strategic approach to the management of an organization's most valued assets: the people working there who individually and collectively contribute to the achievement of its objectives. The main features of HRM include "an emphasis on the strategic management of people (the human capital of the organization) which achieves 'fit' or integration

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between the business and the HR strategy" (Armstrong 3). As shown by these definitions, the two domains are closely linked. For both, the human element is their principal focus and major area of interest.

C. KNOWLEDGE MANAGEMENT

Knowledge management (KM) is one of the most important topics at the present time, as it focuses on the association between business management and technology. To define KM more precisely, I will define the two constituent words of this term. Knowledge is defined as a justified true belief that increases an entity's capacity for effective action (Nonaka and Takeuchi 21). Forms in which we find and gain knowledge are data, results, ideas, new discoveries, news, experiences, observations, and feedback. Management is the act or manner of managing; handling, direction, or control (Dictionary.com). From these definitions, an initial definition of KM can be derived as the way in which the processes of discovery and configuration, storage and restoration, and distribution are used to handle information, apply skills, and build on experiences. The broader and proper definition of KM, from my point of view, is that KM is a discipline that enables individuals, teams, organizations, and communities to more collectively and systematically capture, store, share, and apply their knowledge to achieve their objectives (knowledge-management-online.com). Robert Mathis and John Jackson stated an expressive definition for knowledge management in their book *Human Resource Management.*

> Knowledge Management is the way an organization identifies and leverages knowledge in order to be competitive. It is the art of creating value by using organizational intellectual capital, which is what the organization (or, more exactly, the people in the organization) knows. Knowledge management is a conscious effort to get the right knowledge to the right people at the right time so that it can be shared and put in to action. (Mathis and Jackson 254)

The magnificence of this definition lies in the linkage between knowledge and human capital. Knowledge sources are training, education, skills, and abilities but the most valuable source is human capital that can accommodate, remember and transfer this knowledge within the organization.

D.   KNOWLEDGE MANAGEMENT SYSTEM

A knowledge management system (KMS) employs technology to support more comprehensive management and better results. KMS refers to any kind of IT system that stores and retrieves knowledge, improves collaboration, locates knowledge sources, mines repositories for hidden knowledge, captures and uses knowledge, or in some other way enhances the KM process (knowledge-management-tools.net). The efficiency of any KMS is determined by several factors, including the level of technology, the efficiency of the technical training, and, most important, matching the task for which for the KMS is used.

E.   THE NEED FOR HUMAN CAPITAL MANAGEMENT

In the start-up phase of most businesses, employee management is easy because of the small number of personnel and the simplicity of the work itself. Employee management becomes complicated when the number of workers increases and the business expands. For successful management, most, if not all, businesses create a department responsible for personnel issues. Employee management remains difficult if the absorptive capacity fails to keep up with the increase of employees and input information. The invention and evolution of the computer catalyzed the development of advanced, sophisticated human capital management systems that easily handle tasks once considered obstacles. The most important benefits provided by computer technology are time savings and reliability. The time wasted searching archives has been replaced by database searches that take fractions of a second. The data, which once has a relatively high margin of error, has become much more reliable and accurate. New systems and applications provide other additional features, such as backup in the case of natural disasters, portability among regions, and real-time data about personnel.

F.   MILITARY ORGANIZATIONS AND HUMAN CAPITAL CHALLENGES

Militaries, like any other organization, seek manpower resources. Advances in military technology have not eliminated the role of the human factor in militaries' functions. The greatest challenge faced by militaries is their competitors for manpower,

including private companies that give their employees benefits that the military cannot afford. Budgets often act as a major constraint on militaries, and they cannot award military personnel a percentage of sales. Companies may offer a better work environment and chance for prosperity. Therefore, the military is attractive to only a small percentage of the labor market. On the horns of this problem, the smart choice for militaries is to manage the available manpower well and to recognize it as a valuable resource to achieve present and future benefits as much as possible.

G.   THE ROYAL SAUDI NAVAL FORCES HRM DEPARTMENT

The Royal Saudi Naval Forces created a manpower department, because it realized the importance of manpower in the military. Recently, the RSNF sent a number of officers to study manpower in Naval Postgraduate School (NPS) in preparation for their future job positions. RSNF has given serious consideration to purchasing a new, reliable human capital management system to replace the existing system, which can no longer handle the RSNF's growing needs. Once the officers acquire the needed academic knowledge and an effective system is procured, the RSNF will have a great opportunity to maintain and develop its valuable human capital.

A comprehensive picture of how the knowledge of human capital is managed in RSNF has not taken shape yet. The conditions in RSNF certainly change the view related to manpower issues. The availability of human capital in the Saudi labor market is different from that in other countries, and not all experiences can be imported and applied. There is a particular general direction that can be taken, but no one approach is absolutely right. Unlike other navies, attrition that happens when personnel tend to leave the service rarely exists in RSNF. This is an indication of one of two things; either the training provided does not increase the value of human capital, or career advancement and promotion opportunities are greater in RSNF than in other organizations. RSNF must measure the value of its human capital and the change in that value during recent years.

If we acknowledge that the value of human capital depends mainly on the knowledge RSNF personnel has, we must think about reassessing this knowledge. Estimating knowledge value will be the initial step to competently managing it.

Manpower-related departments can consider redesigning the knowledge management process to reach a new perception which can maintain this knowledge and refine it.

Even in the absence of an HCMS, RSNF can still manage its human capital. An HCMS provides a suitable management tool, but the main reliance will be on the management, which has a clear perception of organizational objectives. An HCMS would be an enormous help, making it possible to save time and effort to better focus on other important aspects of the manpower equation.

Military and civilian organizations use HCMSs to help manage knowledge. These systems differ in their characteristics and capabilities. Available IT infrastructure, networking accessibility, and financial ability are all going to affect the decision to acquire an HCMS. Although sophisticated systems give brilliant results, the most important factor is the compatibility of the system with each organization's status. Some organizations have chosen old systems that match their IT infrastructure. Budget is the decisive factor in some other organizations. In RSNF's case, most options are wide open; the IT infrastructure is up to date, financial resources are available, and communication services are excellent.

II.   RSNF BACKGROUND

A.   LOCATION

The Kingdom of Saudi Arabia's geographic location is unique. It is located in the heart of the Middle East, with extending coastlines on two seas, the Red Sea on the west and the Arabian Gulf on the east. It borders Kuwait, Iraq, and Jordan in the north and Qatar and the United Arab Emirates in the east. In the south, Saudi Arabia borders the Sultanate of Oman and Yemen (Central Intelligence Agency Fact book). This strategic location has made the Kingdom a key political player in the Middle East, while its oil exports make it a major economic force in the world oil market. However, the Kingdom of Saudi Arabia primarily plays a religious role because its territory includes Makkah and Al-Medina, two major holy cities to the 1.8 billion Muslims worldwide (Pew Research Center).

The Arabian Peninsula has always been at the center of world events. Before the emergence of Islam, the Roman Empire and the Persian Empire occupied the area between the Caspian Sea and the Mediterranean Sea, territory controlled today by Iran, Iraq, Syria, Turkey, Lebanon, Palestine, and Jordan as shown in Figure 1. In that era, there was an informal agreement between both empires on the principle of equal powers and on leaving the Arabian Peninsula without any direct governance. The existence of this agreement did not prevent the Persians from trying to invade the Arabian Peninsula. The Arabs repelled the Persian Army and defeated it in 609, causing a scandal for the ancient Persian Army, which had occupied Egypt, the land of the Pharaohs, and controlled it at the peak of the Pharaohs' power (Smith and Wace 487).
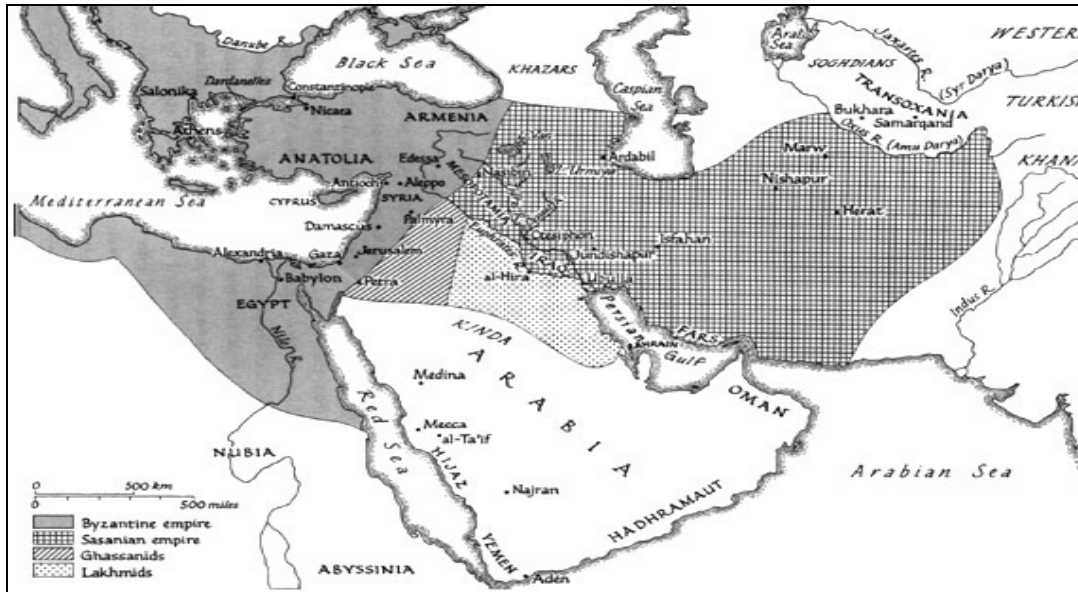
Figure 1.   The Arabian Peninsula Before The Emergence Of Islam. From (Lapidus 12)

This victory was a surprise to one of the greatest powers in the region at that time. No military force could control or dominate the middle areas of the Arabian Peninsula until Islam emerged in 632 (Ibn Al-Athir 378). In the subsequent period, it was difficult for any force to control this area, and its strategic and economic importance had not yet appeared. The arid desert, blazing sun, and rough terrain provided natural protection for the Arabian Peninsula against its enemies for thousands of years.

B.   THE FIRST SAUDI STATE

Since the foundation of the first Saudi state in 1744 by Imam Mohammed bin Saud in Diriyah City, the Saudi Army has played an instrumental role in protecting a state that occupied most of the Arabian Peninsula as shown in Figure 2. Diriyah, as the capital, found itself at the center of subsequent invasion campaigns (Ibn Bishr 1-43). The Saudi Army was made up of volunteers, similar to army reservists by today's standards, and included merchants, workers, farmers, and religious leaders. When the drums of war beat, everyone turned into combatants.

Figure 2.   Geographical Borders of the First Saudi State.
From (Wikipedia, Emirate of Diriyah*)*.

The Saudi Army was able to prolong the Saudi state's existence by defending its cities. The first Saudi state remained for more than 70 years and did not fall until attacked by Ottoman-Egyptian forces and their cannons, which were considered very advanced weapons at the time. The spearhead of the Saudi Army were knights, camel riders, and infantry division, who depended only on their courage and guns (Ibn Bishr 1-397).

The courage of the Saudi Army did not help them resist the siege of Diriyah, which left the defenders without food or ammunition supplies for nine months. The Ottoman sultan awarded the Saudi Army with a medal of honor in recognition of its strength and steadfastness. The Egyptian army commander was assisted by the French Officer Monsieur Veissière as a military advisor, who fought with Napoleon Bonaparte, in developing offensive plans, providing supporting evidence that the Saudi Army was a strong contender. The Saudi head of state, Imam Abdullah bin Saud, was sent to the Ottoman capital, Istanbul, to be executed after Ibrahim Pasha pledged to keep him alive in the terms of surrender (First Saudi State). Ruler of Egypt, Mohammed Ali Pasha was rewarded by the Ottoman Sultan with a kind of autonomy in Egypt after his successful invasion of the first Saudi state. Diriyah was burned and destroyed in 1818. Monsieur

Veissière praised Imam Abdullah bin Saud by saying : If he had continued his father's strategies and tactics by fighting us in the desert and open lands and did not barricaded Diriyah, it would be difficult for us defeat him in any means "(Al-Sudairy).

C.   THE SECOND SAUDI STATE

The second Saudi state was established in 1824. Starting from Riyadh, the new capital, located only a few kilometers from Diriyah, the former capital, the Saudi Army swept across the Arabian Peninsula as fast as a cyclone. Surviving members of the former army joined the new army. Swelled with veterans, the Saudi Army was able to wrestle control of its former territory and drive the invaders out (Ibn Bishr 2-39). Learning from the lessons of the first Saudi state, the founder of the second Saudi state, Imam Turki bin Abdullah, who hails from the other branch of the Al Saud family as Figure 3 shows, skillfully used the principle of guerrilla warfare. Saudi soldiers attacked their enemies in every city and village, but when the enemy attacked, the Saudi soldiers faded into the native population, while Imam Turki bin Abdullah disappeared in the desert that he knew so well. The Ottomans used the governor of Hail's forces to attack the Saudi Army and eliminate it by taking advantage of the state's chaos and leadership dispute. The second Saudi state lasted a little less than 70 years before collapsing in 1891 (Philby 147). The first and second Saudi states had a strong land army that took control of large areas of the Arabian Peninsula. In addition, due to its control of the Gulf of Oman and large parts of the Arabian Gulf shores, Saudi ships dominated those regions. The Saudis have benefited from the coastal residents' experience and skills in shipbuilding and sailing (Belgrave 26).
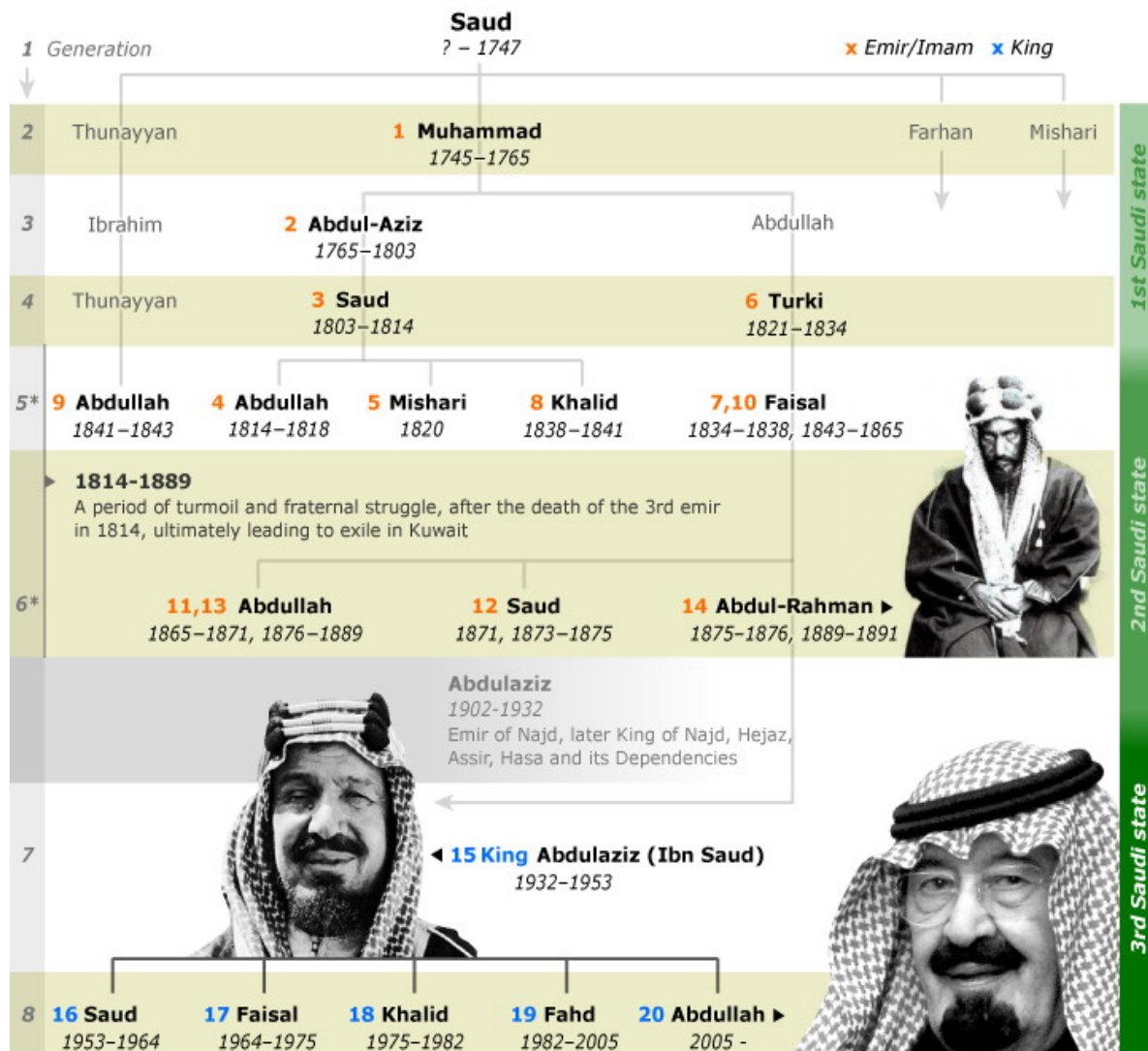
Figure 3.   Al Saud Royal Family Line of Succession. From (Fanack.com)

D.   THE THIRD SAUDI STATE

King Abdulaziz Al-Saud; Shown in Figure 4; founded the third Saudi state on 15 January 1902. He came from Kuwait to capture Riyadh, the capital of his ancestors. The core of his army, less than sixty five fighters, occupied Riyadh and expelled Ibn Rashid (Occupying Riyadh). The strength of King Abdulaziz's army consisted mainly of tribes. Each tribe formed one or more brigades. Rifles are still the main fighting weapon at that time (Philby 237).

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Figure 4.   King Abdulaziz Al Saud With U.S. President Franklin Delano Roosevelt
Onboard USS Quincy In The Suez Canal On February 14, 1945.
From (USN Ships, USS Quincy).

E.   THE BEGINNING OF THE ARMY

In 1929, the army was organized into infantry, artillery, and machinegun units. After the unification of the Kingdom of Saudi Arabia on 23 September 1932, King Abdulaziz realized the importance of its strategic location of the Kingdom and its need for a strong army to protect its independence and sovereignty. The Kingdom of Saudi Arabia's first military training school was established in the city of Taif in 1934, and five years later, the prime military staff was formed. Its growing army led to the creation of the first Saudi Ministry of Defense in 1943. The Saudi Air Force was organized as a branch of the Army in 1952 (Organization of the Army).

F.   SAUDI NAVY

In 1928, Standard Oil of California Company began pumping oil in commercial quantities from well number seven in the Eastern Province of Saudi Arabia, and in 1951, the Texas Oil Company discovered the largest underwater oil field in Saffaniyah, which is located in the Arabian Gulf. Consequently, Saudi Naval control over these areas became inevitable. The economic importance of oil as a major source of income for the country necessitated the protection of offshore oil platforms. The Royal Saudi Naval Force (RSNF) was organized in the mid-1950s as a sub branch of the Army. Initially, it was comprised of a handful of small boats. In 1969, the RSNF received three German-made Cougar model boats. The mission of the Navy at that time was to support border guards and the protection of territorial waters (Saudi Navy).

In the early 1970s, the RSNF signed an agreement with the United Sates Navy (USN) for the Saudi navy expansion program (SNEP), which was the true operational beginning of the Royal Saudi Naval Forces. SNEP provided helped the RSNF purchase ships and aircraft, train crews, build naval bases, and build command and control centers. By the end of the 1970s, Saudi ships began to arrive at Saudi naval bases. The U.S. Navy delivered 4 patrol-chaser missile craft (PCG); Bader class shown in Figure 5, 9 patrol-gunboats guided missile (PGG) craft; Al-Siddiq-class, and 4 coastal mine sweepers (MSC); Al- Diriyah class. The Sawari Project, which was signed with France in the 1980s, included 4 French frigates, Al-Madina class, and 2 supply ships, Buraidah class. Three British-made Al-Jawf class costal mine hunter (MHC) ships entered service in 1991.

Figure 5.   HMS Bader (PCG-612); An Outcome Of SNEP. From (RSNF archive).

Paralleling the contract deals to equip the RSNF, the King Fahad Naval Academy (KFNA), which was established in 1982, has graduated a large number of naval officers. At the end of their training, graduates are assigned to specialties based in the RSNF's needs and the graduates' choices. In 1957, a U.S. training mission in Saudi Arabia contributed to the creation of the Naval Institute of Technical Studies where naval enlistees get their education before joining the service. Because of the impressive outcomes of SNEP-1, the RSNF decided to sign a new expansion program, SNEP-2. Until now, there is no formal agreement about the type of ships sold to the RSNF, but the RSNF will certainly need more military personnel. The RSNF's manpower department will face a real challenge in the upcoming period; consequently, the RSNF urgently needs a reliable human resource management system.

G. COMPUTER USAGE IN RSNF

Computers and their applications are now widely used in the RSNF. These applications range from word processing programs to network management software. Recently, RSNF activated an electronic archiving program in order to keep up with global information technology developments. All RSNF documents were scanned and digitally stored in a single knowledge management like repository. Administrative personnel now have user names that allow them to code and then track each document electronically as shown in Figure 6. Although RSNF was one of the first sectors to use computers, large proportions of its official documents have not been stored as an electronic version and are subject to deterioration, fire, or theft. RSNF is in the process of integrating its communications and computer departments into the information technology department. This approach reflects the RSNF growing awareness of the importance of this field and RSNF's awareness of knowledge management.
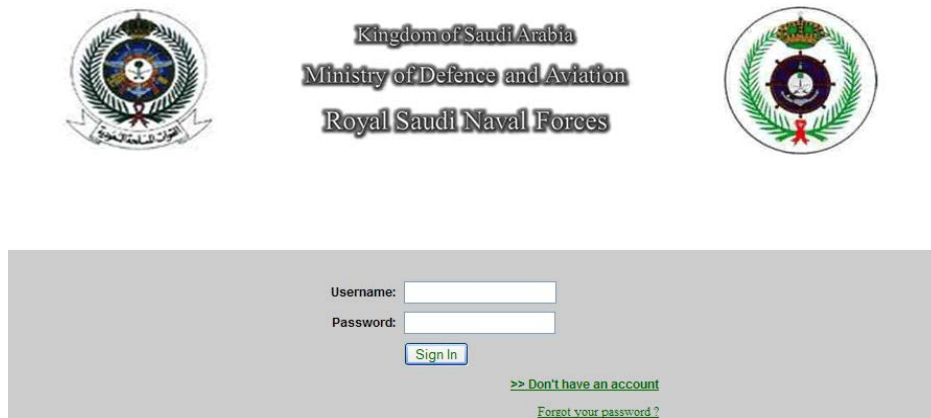

Figure 6.   Log On Screen to the Administrative Network. From (Alghamdi 56).

H. RSNF NETWORKS IN THE NAVY

RSNF mainly uses two networks, an administration network and a tactical network. The administration network is managed by the computer department and is used by the officers' affairs department, personnel affairs department, financial department,

and organization department. When tracking or adding courses as shown in Figure 7, the training department is also partially using this network to track and add courses. Access to this network is available to RSNF headquarters and both fleets. To best visualize the administrative network, it can be described as several modules using a single database with specialized software for each department. For example, the supply department uses the Computerized Provisioning, Allowance, and Supply System (COMPASS) to monitor inventory levels, while the tactical network is managed by the communications department. This network is designed to be used in Command, Control, Communications, Computer, and Intelligence (C4I) centers, and is mainly used by combat units. The tactical network uses fiber optics as well as radio to provide continuous communication channels that are available to decision makers.

Figure 7.   Training Department Course Request Page. From (Alghamdi 59).

I.   HUMAN CAPITAL MANAGEMENT IN RSNF

Manpower issues exist within the Royal Saudi Naval Forces. Systems and software programs manage human capital. These software programs are programmed using Natural Language Programming (NLP), an AG Software product ("Enterprise Management Software and Business Solutions Software"). The mainframe stores the administrative applications and their databases, and the beneficiary departments handle

them through internal network and communication lines, operated by RSNF. As shown in Figure 8, some of these departments report directly to the RSNF commander, while others report to heads of staff. The manpower-related missions of these departments are extensive and systemized.
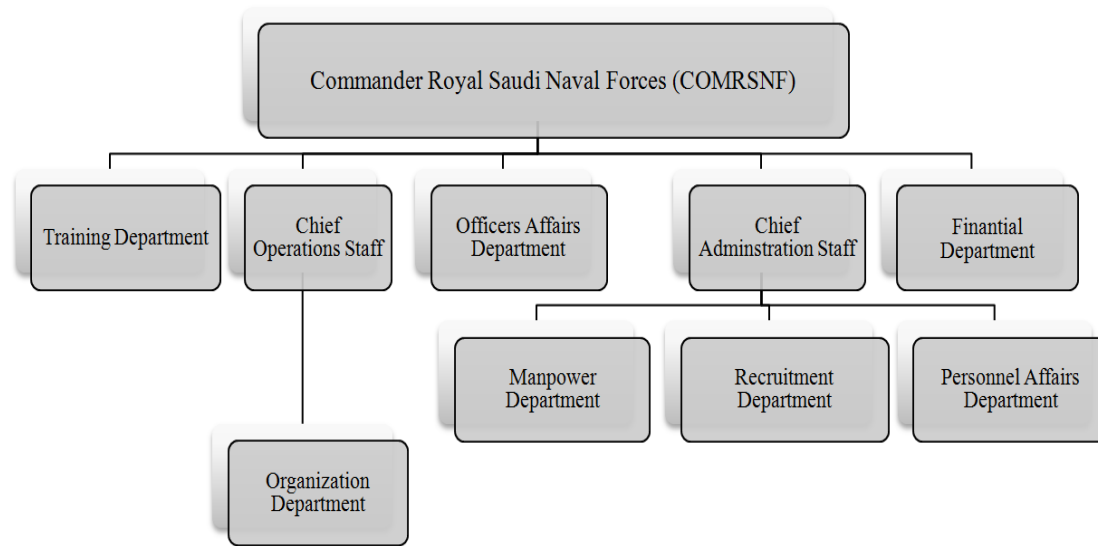
*Not all staffs/departments of RSNF are included.

Figure 8.   RSNF Manpower Issues Related Departments.

The Training Department is responsible for providing educational training courses to RSNF personnel in order to meet job requirements. Those courses range from basic to advanced. The Training Department's responsibilities include overseeing the pipelines of training and their preparation. Educational training can be with the RSNF, within the Kingdom of Saudi Arabia, or external training. The Training Department also receives and chooses the best candidates for other courses.

The Organization Department's duties include the issuance of billet numbers and review their job descriptions. This department must approve any changes. The Officer's Affairs Department is responsible for officer transfers, assignments, retirement, and leaves of absence. This department issues officer

orders. Promotion tests and results make up the core of this department. This department reviews and saves an efficiency report of each officer for future use.

The fourth department is the Recruitment Department. Its responsibilities include the assessment of candidates and the selection of the best individuals for service. This department determines the required manpower based on RSNF's requirements.

The Personnel Affairs Department enlists personnel transfers, assignments, retirement, and leaves of absence. It maintains information updates and replacements, which provide substitutes for the personnel who have completed their service onboard HMS ships. All personnel information are maintained through this department as shown in Figure 9.

Due to the absence of Human Capital Management System (HCMS), the Manpower Department has little influence with human capital. Its roles include: serving as an informational link between departments regarding manpower issues and finding a better way to reach the best results of human capital performing. The Financial Department is responsible for payroll management and financial benefits.

Figure 9.   Personnel Department Basic Data Page. From (Alghamdi 82)

J.   CURRENT ISSUES

Numerous flaws occur within human capital management at the RSNF. One flaw is an interruption or sudden stop. The administrative network main frame malfunctions due to its inability to experience extreme pressure. When the network connection crashes, the only solution is manual help. The disconnections are due to narrow bandwidth because of the system's limited scalability. These frequent interruptions disrupt the system's performance and hinder the flow of work.

Another flaw is unreliability. The absence of a reliable human capital management system results in distrust of any available results and outcome. Orders are not official until signed by an issuing department head, which may delay their execution. This detainment leads to more paperwork, requiring more labor.

Inconsistent standardization results in the lack of unified mechanisms for inputting data into a labor database. Incorrect data entry will affect the accuracy of the outcome for any analysis. Improper data storage occurs when older information is cleared due to the submission of new information. This malpractice eliminates the possibility of

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following changes through a certain period of time. In some cases, no appropriate field exists to insert specific information, leading to possible tampering.

Another flaw is an absence of alert features. Some departments do not offer alternative solutions to problematic cases. For example, some workers retire without a replacement for their position. If a department head is unaware of impending retirements, his department will suffer due to a shortage of labor.

Since the financial department is the final department to receive assignment orders, financial benefits are not paid on time. Future payments can be paid or deducted without justification.

III.   USING HUMAN CAPITAL MANAGEMENT SYSTEMS

A.   HUMAN RESOURCES MANAGEMENT SYSTEM (HRMS)

Most manpower and personnel departments use Human Resources Management Systems (HRMS) as a mean to carry their missions and functions. There is no doubt that these departments are able to perform their duties without those systems, but HRMS shortens the time needed to enter and retrieve information. The term HRMS was coined by Ceriello in 1973 (Ceriello and Freeman 1). Before that, the process was referred to using many different terms, such as employees' data processor or staff information systems. Ceriello and Freeman defined HRMS as

> The software, hardware, support function, and system policies and procedures for a computer system designed to support the activities of the human resources department, This system is also known as an Employee Information System (EIS), Personnel Data System (PDS), Personnel Management Systems (PMS), and automated personnel management reporting system (APMRS). (26)

Roebuck defined HRMS as the system and processes at the intersection between Human Resources Management (HRM) and the information technology field (Roebuck 1). Many other sources use another term for HRMS, which is Human Resources Information System (HRIS). According to Kavanagh, Thite, and Johnson, "HRIS is the system used to acquire, store, manipulate, analyze, retrieve, and distribute information regarding an organization's human resources. An HRIS is not simply computer hardware and associated HR-related software. Although HRIS includes hardware and software, it also includes people, forms, policies procedures, and data".

The increased usage of HRMS has raised it sales from one million dollars in 1983 to 80 million dollars in 1991 (Ceriello and Freeman 9). The popularity of HRMS stems from the fact that it provides variety of services related to manpower management. HRMS's signature feature is that it contains several modules, each one of which deals with a different interest. The modules that HRMS manages include personal employee information, wages and salaries, review dates, benefits, education and training,

attendance, and performance appraisal (Ceriello and Freeman 11). Other modules can be added to cope with an organization's needs, such as recruitment or employee self-service modules. In their book, Ceriello and Freeman listed the following eight parts that every basic HRMS must contain in order to work efficiently:

1. **Data on employees:** A revised database for all of the organization's staff that is ready to be analyzed as an input. These data include basic information, such name, age, marital status, and position. More information about employees may also be available, such as educational history or experience.

2. **Human resources-related information:** Other information that is associated with employees' information, such as job description or wage-rate tables.

3. **Software:** Programs that handle the input information and draw outcomes from it. Some of these programs may be commercially used, and some software may be specially designed for an organization.

4. **Hardware:** A physical platform on which software runs and which provides tools appropriate for input and output operations. This hardware includes monitors, printers, and processors.

5. **Staff:** A team that works on the system and deals with it. It includes operators, developers, programmers, and security experts.

6. **Manual operations:** Conventional processes that support automated work or, in other words, are processes that do not use system in any way yet are indispensable for HRMS support.

7. **Policies and procedures:** Rules that govern dealing with the system that specify the action steps and procedures to be followed at every stage.

8. **Users:** All people associated with the human resources system, whether working inside or outside the manpower department.

These parts may appear under various names or different descriptions, but they are certainly key components. No HRMS will be identical to other systems, because every system has its specific structure depending on the tasks it carries out. An

organization's choices also will determine what characteristics the HRMS will have, such as storage capacity, processor type, programming language, or other features. Based on these characteristics, a general profile of the HRMS will be composed to determine the extent of its variation from other systems. Regardless of the features and characteristics of the selected HRMS, if properly used, it will surely increase data accuracy, processing speed, and productivity and will ensure accurate results (Ceriello and Freeman 13).

When an organization searches for a new HCMS, it is not a pointless effort. The main goals are to improve performance and to reach higher overall productivity. Using an HCMS with more capabilities will lead to the following results:

1. Processing Speed Services all over the world are facing new challenges in an uncertain and dynamic global environment. Forces need to leverage innovative concepts, cutting-edge technologies, and joint-integrated operations to meet current and future challenges effectively and economically. The only solution to emerging new threats is a highly networked, information-centric fighting force.

2. Automation Human capital management solutions today eliminate manual administrative procedures, increase the efficiency of human resources teams, and significantly minimize the costs associated with recruitment, deployment, training, career management, promotions, retention schemes and supply chain. The workforce data then can be used to plan/manage staff, make financial/budgeting decisions, manage logistic/supply lines, control inventory/spare stocks, prepare maintenance plans, forecast spare requirements, issue orders, plan exercises, exchange data, manage records, etc. Moreover, HCM or HRM sends a message to soldiers that they are the core of all strategic and operational decisions. As a result, it can boost satisfaction and morale, reduce turnover, and build a stronger, more motivated, and more loyal workforce, which is the real essence of any fighting force.

3. Informed Decision Making HCM/HRM also helps in informed decision making. An informed military decision happens when enough information

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has been gathered from intelligent devices and systems to facilitate data-driven learning, which in turn enables a subset of machine and network-level operational functions to be transferred from operators to secure digital systems.

4.   RSNF may benefit from making informed decisions using HCMS/HRM in order to cope with the increasing complexity of interconnected machines, facilities, fleets and networks.

5.   Cost Reduction Services all over the world are increasingly facing budget cuts due to prevailing economic conditions. Businesses, as well as governments, are forced to find ways and means to reduce the costs of maintaining their businesses while increasing efficiency. A major focus of technology advancements is also efficiency and speed. Many tasks which were once performed by human beings are relegated to machines to reduce costs and increase efficiency with every passing day. ERP systems have helped organizations to automate their business processes, and HCM systems have revolutionized human resource management. Many costs can be eliminated with the help of HCMS. It was once customary to send hard copies of policy letters to the lowest tiers of an organization. The costs of reproduction and human labor can be saved simply by uploading the soft copy to the relevant section of the HCMS. Similarly, newspaper costs, library book costs and other official communication costs can be eliminated by uploading electronic versions to HCMS once for all. Many civilian and military organizations are making effective use of the available technology in this field.

6.   Accuracy/safety of data the importance of accurate data cannot be overemphasized. Chances of error are greater while retrieving or processing any data, despite the long lead time. HCMS systems have made it quite possible to keep your data accurate and current in a real time scenario. Although there is great concern regarding the security of data for network-enabled HCM systems, one can very easily monitor whether data

security is being compromised by any unauthorized activity. On the other hand, one may never know of the reproduction of any data stored in the form of hard copies under lock and key. A modern HCMS has access levels, and from a given terminal one can only retrieve the information/data which is authorized for retrieval from that particular terminal. In the case some hacking activity has been carried out, one may sanitize the data with the help of comparisons with backups. Necessary precautions may be enforced to ensure security in future.

7. Document Tracking/Performance Monitoring RSNF, like all other navies of the world, maintains its organizations by delegating authorities from a higher level to lower levels. There is always a continuous vertical, as well as parallel, flow of documents between lower and higher tiers of authority. Normally, proposals, progress reports, status reports, and formal requests flow from lower organizational levels to higher organizational levels, while orders, decisions, policies and approvals flow from top to bottom. In the case of hardware routing of file and letters, it becomes very difficult to keep track of the documents. However, the proposed HCMS for RSNF may be customized to have a document tracking feature, where all relevant parties can see not only the location of the document, but also the status of the document. A document tracking tool provides data on all routing of the file and who has spent how much time on the file. This tool becomes especially useful in higher RSNF headquarters, where only staff work is being carried out. Senior officers may monitor the efficiency as well as quality of each staff officer under his command with the help of this tool.

B. NAVAL STANDARD INTEGRATED PERSONNEL SYSTEM (NSIPS)

The United States Navy (USN) manages its human capital through the Navy Standard Integrated Personnel System (NSIPS). USN sailors worldwide can access NSIPS, which is available 24 hours a day. An Electronic Service Record (ESR), career

counseling records, training data, and more other personal information are stored there and ready to be viewed, as shown in Figure 10.
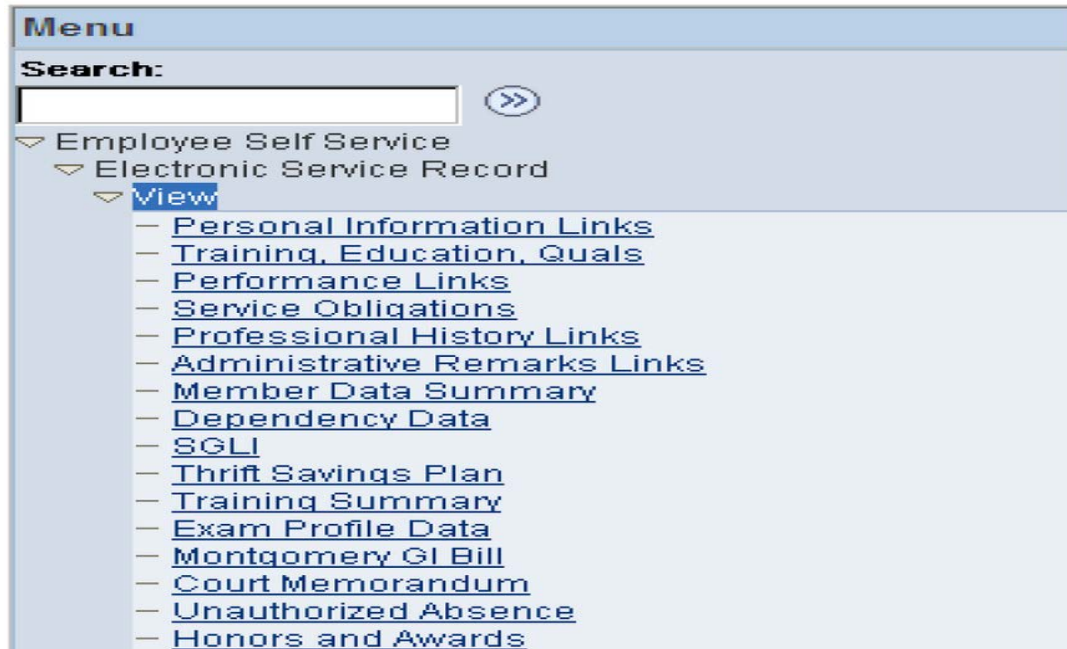
Figure 10.   NSIPS Personal Information. From (U.S. Navy Hosting).

The system is installed at 570 Ship and Shore Sites, and this figure will eventually increase (United States, "NSIPS"). All active-duty and reserve sailors' USN personnel information are stored on NSIPS servers. The system is accessible using an NMCI computer for shore-based sailors, or with a DoD (Department of Defense) Public-Key Infrastructure (PKI) certificate via any web-enabled personal computer (United States, "NSIPS"). NSIPS sends and receives work items, updates and records to and from the main server for ships that don't have Internet access. Privacy is achieved by using Secure Socket Layer (SSL) encryption technology to ensure the greatest data protection. The completion of System Access Authorization Request (SAAR) shown in Figure 11 is mandatory before accessing NSIPS for the first time.

Figure 11.   System Access Authorization Request (SAAR) (CNIC Headquarters).

Through the address https://nsips.nmci.navy.mil, sailors are able to add, delete, update, and change their personal information. A great NSIPS feature is eliminating the need to send software updates to the individual personnel processing locations around the world, because it is done through the web server. Step by step tutorials are designed to guide the sailor while using the system, as shown in Figure 12 (United States, "NSIPS Provides").

STEP BY STEP GUIDE TO UPDATE YOUR RECORD OF EMERGENCY DATA

1. Open internet explorer and proceed to the Navy Standard Integrated
Personnel System (NSIPS) site at https://nsips.nmci.navy.mil/ on a Common
Access Card enabled computer.

https://nsips.nmci.navy.mil/
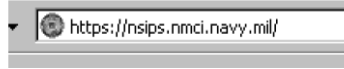
2. When asked to choose a digital certificate ensure that you **DO NOT** select
the EMAIL certificate. Click on the "Logon" button.

DoD CAC Authentication	User Information
	» ESR Self-Service Login Instructions
	» Civilian Employer Information (CEI) Login Instructions
[Logon]	» Create ESR View Only Account Instructions
	Documentation & Training
System Access Authorization Request (SAAR)	» ESR Self-Service Desk Guide
» New Users (NSIPS, ESR, CIMS, Web Ad Hoc)	» ESR Frequently Asked Questions (FAQ)
» **ESR Self-Service (New Users)**	» E-Leave Job Performance Aids (JPA)
» ERM SAAR Validation (Supervisor)	Menu

3. At the NSIPS welcome screen select Member Self Service, "I have read and
consent", and click on the "Logon" button again.

⊙ william.hamb   Member Self Service

Figure 12.   NSIPS Step By Step Tutorials. From (U.S. Navy Hosting)

NSIPS is a model from which to draw quality attributes for the HCMS. Despite vast differences in existing IT infrastructure and available database resources within the USN and RSNF, NSIPS can fulfill R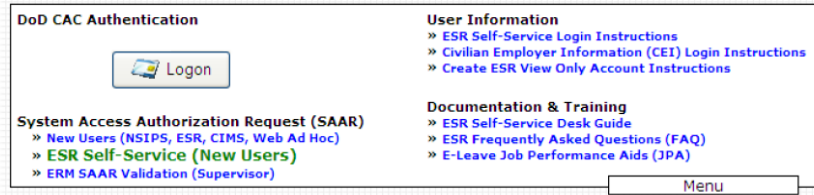SNF's HCMS needs. Integration of NSIPS with legacy systems already in service with USN and the available database resources was a big challenge because of high-tech legacy systems. However, RSNF does not have that complex IT infrastructure and can take complete advantage of the high-tech features of NSIPS. Another convincing reason to use NSIPS for RSNF is Research and Development (R&D) cost savings and absence of high risk. NSIPS is a proven system and there is no risk associated with its implementation. All the software problems and bugs have already been fixed, and the system is fully operational in the USN. Although the essential detailed requirements and scope of the HRMS may vary because of the size of the USN versus RSNF, the overall software layout will remain the same. NSIPS may prove cost effective for RSNF because of its web-based application. RSNF may use and upgrade existing hardware to fully implement NSIPS.

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The USN has a peculiar requirement in making NSIPS available worldwide, both ashore and afloat, because of long deployment periods and carrier groups' overseas assignments, which at times exceed six months in duration. It becomes mandatory for the USN to ensure that sailors afloat have access to NSIPS to carry out their official day-to-day business effectively and remain connected with their dear ones back home. This setup requires a sophisticated integration between various networks involving satellite communications and, above all, requiring highly secured Internet applications. These features combined together render NSIPS a cost effective model for RSNF in terms of capabilities integrated within one system and subsequent life cycle operational costs. Induction of state-of-the-art platforms in RSNF, growing infrastructure, the increasing size of the force, various modernization programs in place and increasing responsibilities of RSNF due to fragile stability conditions in the region cause extra demands for efficient resource management, especially for human capital. Even though NSIPS' capabilities exceed RSNF's current needs, the system remains a good choice that has been tested and has proven its superiority.

C. THE PAKISTANI ARMY MANPOWER SYSTEM

Another such system is the Office Automation System (OAS) in use with the Pakistani Army. This is a multi-module Enterprise Resource Planning (ERP) system which is completely integrated and secure. According to ESOLPK (Pvt.) Ltd., "A total of 17 modules along with different network and hardware solutions were developed and deployed which included the document tracking system, office correspondence, Human Resources (HR), payroll, finance and budgeting, personnel management system, decision control panel, inventory management system, land and engineering system, accommodation system, military transport system, workshop system and mess system".

Although it may be mistakenly understood that an office automation system only deals with general office management work, in fact, document tracking (which helps to provide a paperless environment) is only one module out of 17. The overall system has a central repository of data, and all workstations are mutually connected via a fiber optic cable. In forward-deployed areas where fiber optic media is not available, connectivity is

achieved via microwave links. HR, payroll, finance and budgeting, personnel management system, and the decision control panel module actually combine together to form an effective HCM/HRM system. Each member of the service has an individual user name and password. Each member may also access the system by swiping his service card, which already contains access information, from anywhere in the country. All service commands are interconnected, and each individual has access to service records, policies, and forthcoming courses. Various human resource management departments can access and upgrade relevant data at the same time. In fact, the system is a useful management tool for effective monitoring, controlling and directing.

D. MANPOWER SYSTEM USED BY CIVILIAN SAUDI COMPANY

Saudi Basic Industries Corporation (SABIC) is a diversified manufacturer of chemicals and intermediates, industrial polymers, fertilizers, and metals. In 2012, the Forbes website showed that SABIC ranked number 88 of the world's biggest public companies with a $84.4 billion market value. Based in headquarter located Riyadh and shown in Figure 13, SABIC has interests in 17 affiliated companies, ranging from full ownership to significant partial participation. On its homepage entitled "Innovative Plastics," SABIC claims that it owes its success to its people. SABIC has a diverse, multinational workforce of over 33,000 employees. SABIC's human capital management staff is well aware of the importance of skilled workers in a complex and fast-moving industry. Therefore, it cultivates a business culture that encourages creativity, innovation and personal development. The corporation maintains close links with universities and vocational schools and makes sure that their curricula meet its needs. SABIC also gives people the opportunity to continue training after they have joined the company so that they can gain the skills and qualifications they need to climb the career ladder. In this way, SABIC retains talented individuals and safeguards its position as a leading company. SABIC is committed to the continual development of its people and offers them a clear career path. It has an active Continuing Education and Knowledge Transfer Program, incorporating on-the-job training that gives employees the opportunities to gain

new skills. Saudi employees are encouraged to pursue higher education and to specialize through scholarship schemes. Saudi universities and colleges assist SABIC by arranging work-related training.

Figure 13.   Headquarters Of Saudi Basic Industries Corporation (SABIC), Riyadh (construction week online).

SABIC's HR department has recently experienced a revolution. It is now larger, more capable, and better able to improve efficiency. An important part of its work is to encourage clear communication among people in all levels of the organization. SABIC's HR employees help keep employees satisfied and run the organization smoothly by working in four areas:

- Leadership development
- Organizational effectiveness
- Performance and rewards
- Workforce planning and development

SABIC is a for-profit organization that focuses on the most cost-effective solutions to its business problems. SABIC employs a supply chain management system codenamed EMDAD, which the HR management team introduced in phases and which is now fully operational. SABIC added additional modules to meet its growing operational needs as it expanded, so the EMDAD system has become more complex. According to Mark Tarrant, "In an organization as complex as SABIC, we literally have mountains and mountains of data constantly flowing through our systems – translating that into something which is focused, usable and actionable is unbelievably powerful."

As the supply chain has an impact on almost every aspect of SABIC's business, EMDAD is used to focus on developing and implementing new systems that are vital to the company's journey towards what it calls its vision 2020 and making SABIC the preferred world leader in chemicals. One new system that generated a lot of excitement is called Business Intelligence (BI), which was used by SABIC to enhance its Performance Management (PM). For SABIC, it is important to harness the power of data that is collected at various locations within the company. The PM system was integrated recently to provide a way to quickly filter, sort, and transform raw data into useful business information that will be essential in driving decisions related to delivering better customer services, responding faster to market needs, and instituting organizational improvements. Moreover, PM is a key tool used to align all SBUs, working teams, and individual employees and to ensure that all talents are used to move the organization in the same direction to achieve its goals.

SABIC is moving towards a system in which strategic targets at the corporate level are tied down with feedback data flowing from the bottom, which means that individuals and teams contribute to linking SABIC's goals, individuals' roles, and improved performance. In its 2011 annual report, SABIC claimed that any business judgment based on robust information will be much better. It said that EMDAD has various modules like a Demand Planning (DP) system based on SAP newly introduced Advanced Planning Optimizer (APO). The other modules include Supply Network Planning (SNP), Production Planning & Detailed Scheduling (PP/DS), and Global Available to Promise (GATP). EMDAD is employed to iron out issues and establish both

a foundation of reliable data and a framework for ensuring consistent improvement and sustainability of data quality. EMDAD and PM provide SABIC management with the ability to see at a glance how the business is performing and quickly spot issues that might require them to drill down to find the causes and take action to address them.

SABIC uses the efficiency of enterprise software and the potential of its workforce to ensure it maximizes its investment by using the following steps:

1. Installation:

   • Server-installation, documentation and procedures.

   • Client software for author, documentation and procedures for creating a company installation packaging.

2. Initial (standard) RWD training:

   • Training for administrators & authors, first in depth training "what are the possibilities of the tool".

3. Visioning & strategy workshop:

   • Set the standards (company template, storyboard definition)

4. Integration possibilities with other tools:

   • SAP, solution manager, ARIS, other windows applications.

5. Training with company standards to authors and administrators:

   • Creation of user documentation conform standards for project.

   • Explanation of administrative handling of created documentation in project (sabic.com).

E. AN OVERVIEW OF THE HUMAN CAPITAL MANAGEMENT SYSTEMS' VENDORS

One purpose of this thesis is to provide market research regarding all available HCM solutions and the world's leading HCM/HRM companies for further negotiations/pre-qualification. Some of the leading HCM/HRM solution vendors are appended below:

- **SAGE HRMS:** The Company's sole focus is to provide business management software and services to Small and Medium-Sized Businesses (SMBs). As the longest-running Human Resource Management System (HRMS) solutions provider, Sage HRMS delivers flexible, scalable, and comprehensive tools to help you to automate and improve your business processes as well as to produce the information you need in order to better manage your workforce. Unlike other systems, Sage HRMS's solution combines low cost, ease of use, and the ability to dynamically share information with executives, managers, and others both inside and outside of your organization (na.sage.com).

- **Checkpoint HR:** Checkpoint HR combines payroll, benefits, and HR management services with a Web-based HRMS technology platform to offer customers an affordable and centralized solution for integrating all aspects of human resources, from hiring to retiring (checkpointhr.com).

- **Epicor HCM:** Epicor HCM is a division of Epicor Software and focuses on providing the best human resource software solution possible. Beyond providing a comprehensive HRMS, Epicor HCM can fully integrate with the other business solutions that Epicor Software provides. These software solutions include payroll, Enterprise Resource Planning (ERP), Customer Relationship Management (CRM), and Supply Chain Management (SCM) (epicor.com).

- **SAP:** SAP is a German multinational software corporation that produces enterprise software for managing business operations and customer relations. SAP is the market leader in enterprise applications in terms of

software and software-related services. The company's best-known software products include its ERP application (SAP ERP), its enterprise data warehouse product known as SAP Business Warehouse (SAP BW), its SAP Business Objects software, and most recently, its Sybase mobile products and in-memory computing appliance called SAP HANA (SAP.com)

- **Workday:** Workday Human Capital Management is the only application that unifies HR and talent management into a single system of record. Workday Human Capital Management is redefining what it means to manage a global, mobile, and diverse workforce. The company has a variety of applications that it claims are intuitive, adaptable, and unified. Workday Human Capital Management's key attributes are as follows:
  1. Produce optimal data visibility, ensure cost-effectiveness, and operate with efficiency and accuracy.
  2. Strategize and prepare the organization for future shifts, emerging markets, and growth.
  3. Build effective teams by searching for workers by talent, skills, and job profiles and by narrowing down their requirements with configurable filters (workday.com)

- **NetSuite:** NetSuite is a leading company that provides HCM/HRM software as a service, which is abbreviated as SaaS. SaaS is primarily a cloud computing technique where the firm owns the infrastructure, hardware, and software and then charges the clients for its services. SaaS is closely related to the Application Service Provider (ASP) and on-demand computing software delivery models. IDC identifies two slightly different delivery models for SaaS. The hosted Application Management (AM) model is similar to that of SAP: A provider hosts commercially available software for customers and delivers it over the Web. In the software on-demand model, the provider gives customers network-based access to a single copy of an application created specifically for SaaS distribution (netsuite.com). Benefits of the SaaS model include:

1. Easier administration

2. Automatic updates and management of patches

3. Compatibility (all users have the same version of the software)

4. Easier collaboration

5. Global accessibility

The traditional model of software distribution, in which software is purchased for and installed on personal computers, is sometimes referred to as "software as a product." RSNF must also look into this option based on its requirement analysis. The company may have to contract to have more than single software in order to meet all of its HCM requirements. However, the advantages of the traditional model of software distribution option have many merits that require consideration. Security standards vary between providers and thus are worth receiving special attention.

F. KEY INFLUENTIAL STANDARDS TO CONSIDER

When RSNF acquire new HCMS, there will be a several standards to consider. Information Technology (IT) provides a large variety of available solutions for HCM/HRM based on businesses' core activities. However, the commercial solutions that are readily available may not meet all of the requirements mentioned above. In order to secure the maximum value of our investment in HCM, RSNF may focus on the following key features:

- **Customization:** Although each organization and the way it runs its human resources department is unique, RSNF has additional requirements, such as mobilization plans, overseas deployments, time-based promotions, and training needs for career progression. Therefore, any applications that can be custom-tailored to RSNF's HR-specific environment, procedures, security requirements, need-to-know barriers, and redundancy requirements shall be shortlisted for procurement.

- **Analytics:** Any solution selected shall not merely be a tool to automate administration but rather shall be able to provide sufficient data to understand current trends and patterns that impact the war fighters. RSNF shall look for a solution that incorporates in-depth analytical capabilities; critical metrics, such as turnover rates; length of service; various rates such as inductions; promotions; shortages, if any; and correlations among various factors that affect morale.

- **Integration:** The most painful job in any IT system is its integration with existing organization systems as well as related external systems. RSNF thus shall clearly identify the existing systems that need to be integrated with the proposed system and any other systems, such as those of banks, insurance companies, utility service providers, and housing agencies. Moreover, the protocols and extent of data sharing with outside agencies without compromising the security of the HRM system shall be clearly defined.

- **Interoperability:** The system's ability to match other already existing systems is significant. This feature means a lot to organizations that have different systems from various providers. To clarify this issue, we can look to the Command, Control, Communications, Computer, and Intelligence (C4I) systems that RSNF uses as well as the image efforts made and the time spent matching this system with other systems that the Ministry of Defense (MOD) uses.

- **Network Management:** This application shall consist of a module that can effectively manage all work stations within the network and shall have a help desk application. The application shall be able to scan the network and monitor the status of all computers and peripherals. The data obtained shall be useful to network administrators in maintaining the network. The data integrity and data maintenance systems shall have data validation procedures to avoid errors promulgated by typing mistakes during input, the malfunctioning of hardware, or the transmission of data. The system

shall have adequate procedures for adding, modifying, or deleting records for the purpose of data integrity.

- **System Maintenance/Upgradation:** The system must have necessary documentation for its maintenance. Maintenance includes tasks such as making adjustments to the system with regard to any changes in the service structure, data addition, data deletion, record adjustments, making backups, or data copying. This requirement shall be emphasized, as life cycle costs are directly related to this factor. In case the system does not perform as intended nor has a few drawbacks after full implementation, we may make the best use of the system if we have proper documentation and well-described procedures.

- **Security/Information Assurance:** A major concern for a defense service with any type of data system is its security. Security is a system-designed feature and thus cannot be added after system acquisition or implementation. Therefore, the HRM/HCM system shall be fully secured from unauthorized access to data. Security is not a majorly desired feature for defense systems or even for ERP systems, but it is a rising concern for commercial business.

G. EXPECTED FUTURE RESULTS

RSNF shall be looking for an HCMS that provides full automation and supports the following core HR processes and activities:

- Planning and modeling, to help lay out organizational charts and chain-of-command structures and clearly define roles and responsibilities across service/command.

- Recruiting and staffing, to facilitate calculation of manpower requirements by rank according to government authorizations.

- On-boarding, to facilitate and accelerate co-ordination between training establishments, accounts offices, personnel gear supply depots and drafting authorities.

- Performance management, to formalize and streamline annual evaluation reports and overall standing of each individual within his rate/rank, and to keep track of employee performance records.

- Benefits and compensation administration, to manage salaries, allowances, special pay, annual increments, transfer grants, allotments, house rents, bills, income tax and all other applicable pay/pension-related issues.

- Leave, to help track employee vacation rosters, sick leave, and mobilization plans.

- Training and education, to ensure that all employees are provided timely opportunities for professional growth and skills expansion. This application shall be used for uploading tutorials, administering tests, and reporting the results. The application shall have administrator, sub-administrator and user features for login. The various levels of logins shall determine what each user can do and what he cannot do. The application may have additional features for emailing results to other relevant departments for updating of central records.

- Health care data system: Health care is important for any defense service. HCM/HRM may include a comprehensive package that includes various modules which cater to different functional areas of healthcare such as patient care, hospital administration, clinical support (lab test results), sick leave, medical boards, annual medical reports and ancillary services.

- Career management, to keep track of due advancement and promotions. This would take input from performance management and make a roster for upcoming promotions as per established approved criteria.

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IV. SUMMARY, CONCLUSION, AND RECOMMENDATION

A. SUMMARY

Our service members are the most valuable resource in building an efficient force. Services, therefore, must constantly seek new and innovative ways to attract and retain highly motivated service members. Motivated service members are expected to perform to their fullest potential in the combat zone under tremendous pressure. Recent increased public awareness and sensitivity to personnel costs have challenged the military to operate more efficiently. The ability to make vast amounts of data available these days due to advances in information technology has done away with cumbersome, labor-intensive processes now allowing human resources managers' better oversight of personnel-related tasks, activities, and skill sets.

Human Capital Management (HCM) is also commonly referred to as Human Resource Management (HRM) or workforce management and is a discipline that combines technology with data storage to more effectively build, manage, and maintain personnel assets. Today modern militaries of the world are equally concerned about HCM and rely on knowledge management systems to achieve their goals. RSNF is no exception to this endeavor. The current Knowledge Management (KM) systems being used by Royal Saudi Naval Forces (RSNF) are decades old and do not effectively meet the requirements of the naval force.

The military forces need to leverage innovative concepts, cutting-edge technologies, and joint-integrated operations to more efficiently meet today's Human Resources (HR) challenges. Human capital management solutions today eliminate manual administrative procedures, increase the efficiency of human resources teams, and significantly minimize the costs associated with recruitment, deployment, training, career management, promotions, and retention. The Human Resources Management (HRM) data that represent the work force can then be used to plan/manage staff, make financial/budgeting decisions, manage logistic/supply lines, issue orders, plan exercises, manage records, etc. Moreover, HCM (Human Capital Management) or HRM sends a

message to service members that they are the core of strategic and operational decisions. As a result, better KM can boost satisfaction and morale, reduce turnover, and build a stronger, more motivated, and loyal workforce, which is the real essence of any military organization.

HCM/HRM supports intelligent decision making. Intelligent decision making occurs when enough information has been gathered from Information Technology (IT) systems to facilitate data-driven learning, which in turn enables a subset of machine and network-level operational functions to be transferred from manpower and personnel managers to secure digital systems. Informed decision making in HCM/HRM is an essential required feature for coping with the increasing complexity of interconnected machines, facilities, fleets and networks.

B.   CONCLUSION AND RECOMMENDATIONS

1.   How Does the RSNF Currently Manage Human Capital?

a.   Conclusion: RSNF's human capital is organizationally and technologically limited preventing timely and accurate results being drawn. Although this system has fulfilled the main goals of manpower and personnel management, it has not achieved the maximum utilization of human capital. Current efforts to establish a human resources network for the RSNF have not been effective because no single department is leading the process. Recent efforts have been impaired by randomness caused by the current system's inability to meet the RSNF's growing demands. Based on the change management process, all changes go through 8 phases which are denial, frustration and anger, negotiation and bargaining, depression, acceptance, experimentation, discovery and delight, and integration (Baekdal, Hansen, Todbjerg, and Mikkelsen 5). RSNF is now in the acceptance phase where it is willing to accept positive chance. Many efforts have been already been made and three positive steps experimentation, discovery and delight, and integration remain for the RSNF.

b. *Recommendation:* RSNF should closely examine its current manpower and personnel management structure and continue to embrace the last three challenging phases.

2. **How Would a Human Capital Management System (HCMS) Improve the RSNF's Readiness?**

a. *Conclusion:* A redesign of the information technology network would better provide the RSNF's present and future manpower and personnel needs in support of readiness. The readiness gap is the difference between the size of the force needed for full operational requirements and the size of the current, available force. The smaller this gap is, the higher the operational readiness. A new HCMS should increase the value of the RSNF's human capital thus addressing any potential readiness gap issues.

b. *Recommendation*: The RSNF should invest in a new HCMS which would improve the ability to manage manpower, personnel, training, and education more efficiently.

3. **What Personnel Systems are Military and Civilian Organizations Using for Knowledge Management?**

a. *Conclusion:* The thesis presented multiple systems that manage human capital. Those systems are produced by various providers and offer different capabilities and features. Organizations choose systems that best support their needs in order to fully utilize their human capital. There is no single path that the RSNF must follow in order to acquire a Human Capital Management System (HCMS). A wide variety of options are available to the RSNF, and these options are changing rapidly due to advancements in information technology (IT).

b. *Recommendation:* Any future HCMS should be consistent with the RSNF doctrine in terms of customization, analytics, integration, interoperability, network management, system upgradation, and security. The future system should improve the planning, staffing, financial management, training, healthcare, and career

management within the RSNF. The following steps should be used by the RSNF in its acquisition strategy for an HCM system:

1. The RSNF should form a core team that consists of officers from its manpower, communications, operations, and computer departments. A Statement of Objectives (SOO) and configuration requirements should be developed.

2. The temporarily team should attached to SABIC (Saudi Basic Industries Corporation) in order to gain first-hand knowledge of the SABIC acquisition and implementation experience.

3. The RSNF may then issue an international Request for Information (RFI) in order to acquire the proposed solutions of the world's leading companies.

4. The RSNF should examine systems such as the USN's use of Navy Single Integrated Personnel System (NSIPS) provided by Lockheed Martin Information Technology.

5. The team should visit the solutions that the shortlisted firms supplied to other organizations, if already implemented, in order to check the solutions' suitability for RSNF. The USN and Pakistani army systems may also be evaluated on site in a real-time scenario.

Based on the activities 1-5 above, the committee may refine RSNF requirements and initiate the acquisition process as appropriate.

C. FUTURE RESEARCH

A study to investigate manpower systems used by other military and civilian organizations should be conducted. I highly recommend that all Saudi military organizations unify their efforts in those studies. Such united efforts will reduce both the cost and the time required to find a HCMS that will assist in the manpower and personnel management of the Saudi armed forces.

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