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Healthcare Software Implementation: An Assessment Of Senior And Non-Senior Management Views Of Effectiveness

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**HEALTHCARE SOFTWARE
IMPLEMENTATION:
AN ASSESSMENT OF SENIOR AND NON-
SENIOR MANAGEMENT VIEWS OF
EFFECTIVENESS:**

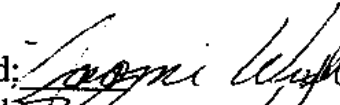
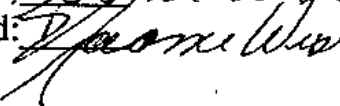
Submitted To
Center for Public Service
Masters of Healthcare Administration Program
Seton Hall University

By

Vicky Keresztes

A research project submitted in partial fulfillment
Of the requirements for the
Degree of Healthcare Administration

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Approved: 
Approved: 

In an age when computer technology has grown by leaps and bounds, both individuals and corporations alike are faced with many decisions concerning purchasing and upgrading computer equipment and software. The purpose of this research is to evaluate efficiency, workflow processes, and the perceptions of management versus non-management staff in the implementation of new software.

CMS Systems in Edmonton, Alberta spends an average of \$2500 to \$3000 for each of its computers which comes equipped with state of the art graphics capability. Since only a certain amount of money can be allocated into the operating budget of an organization, as General Manager John Putters contends, capability and the ability to upgrade are by far the most important areas to look at when purchasing computer equipment (Dodge, John. "Breakaway (A Special Report): Staying in Shape". Wall Street Journal, February 22, 1999).

The most obvious reason to upgrade technology and equipment is to increase productivity and expand on services already being provided. An example of the aforementioned includes the Cheyenne Mountain Conference Resort in Colorado. This newly expanded resort boasts an expanded and integrated Media and Business Service Center. The \$150,000 expansion has tripled the size of the facility and combines the two resources into a central location. Capabilities of the resort include the addition of new digital, color and standard copiers and new computers in the Business Service Center which also provides faxing, desktop publishing and Power Point presentation capabilities (Lodging Hospitality; Resort expands in-house media center; Cleveland: September 1, 2000).

As corporations upgrade and purchase new technology, the software and computer services industry must consistently make changes to their software packages to

make them attractive to buyers. With more than 120 million computer users already licensing a version of Microsoft Office, the vendor must market new upgrades to ensure their own success within the marketplace.

With all of the technology available to buyers, companies must make the decision when to buy or upgrade a particular software package, and it is this question that is the basis of this research. Current trends suggest that many companies wait until a major hardware upgrade to refresh their applications. The challenge for the computer services industry will be to attract users with value packed software that will entice buyers (Ricadela, Aaron. "Microsoft's challenge: Ensuring office's future success".

Informationweek September 4, 2000).

In addition to making decisions about purchasing software, other variables play a role in technology upgrades. One such variable includes the impact of upgrading or purchasing software has on a company's value. As EDS (Electronic Data Systems) experienced, expanding its technology and services division damaged its reputation within the marketplace. After the company warned that its 2nd quarter sales would not meet analysts' expectations, shares in the company plummeted. A contributing factor was the expansion into a new services division, and the implementation of technology to continue providing those services (Whelan, Carolyn. "The dinosaur is stirring". Money. September 2000).

Going beyond purchasing computer equipment and software, the survivability of an organization depends on how equipment and software combine along with the ability of staff to perform functions. In many cases, an organization may use different systems to perform various functions. For instance, a Health Maintenance Organization (HMO) may

use one software package to manage claims payments, another to manage patient case management, and still another to keep track of the provider network. The result of maintaining multiple systems leads to an increase in moneys spent to maintain these systems, train staff, and employ computer technician(s). One solution that has been suggested will allow practitioners and payers alike to convert to one system. A patient's information (including type of treatment, when, where and claims payment) would be kept in one universal file where practitioner and payer together would have access. The solution to the problem of utilizing many different systems and having gaps in care, is known as the Consumer-Centric Paradigm.

In the managed care setting, it has been hypothesized that computer technology has failed to solve the information problems of the healthcare industry (Wiese, Calvin. Community Health Networks: Healthcare Technology for the 21st century, August 15, 2000). The solution centers on organizing information around the patient and not on the institution. In order to accomplish this goal, both practitioners and payers alike would utilize the Internet to access a patients' medical history. This file would contain information on all episodes of care from the time a patient is born until death. Since during the course of one's life, a patient will come into contact with many practitioners, and since not all patients will be exemplary historians concerning their own care, the file would be updated by practitioners and payers every time the patient was seen and a claim filed. It has been suggested that by using the Consumer-Centric Paradigm, the quality of care a patient received would improve ten fold.

While this paradigm is an attractive solution to the gaps in care a patient will experience, no real viable solution has been developed in order to make the Consumer-

Centric Paradigm a reality. Aside from the fact that this paradigm is fraught with issues of confidentiality, it is unrealistic to believe that both providers of care and payers will agree to such a system. In order for the paradigm to be a success, a suggestion of giving a patients' "unique health care numbers" in which they may be able to access their records, depends on the patients' ability not to disclose such a number to any persons with the exception of appropriate medical staff and their insurance carrier. The idea of having a number assigned to an individual leaves the patient very vulnerable to other persons attempting to gain access to a patient's medical history. As many people have already experienced, computer hackers are very alive in this society and as long as there is financial gain involved, they will continue to pose a threat to those more vulnerable. The confidentiality issues alone would leave the average lay person uncomfortable. Also, there is the issue of how employers will face the issue of paying for an employee's medical treatment. How much information into an employees' medical record will they be allowed to access? Can they demand that the employee submit the number to a Human Resources representative? What steps would be taken to ensure that Human Resources staff would not be allowed access into the most private parts of the chart, namely the clinical notes? There are too many factors involved on the confidentiality issue alone that would make the Consumer-Centric Paradigm unrealistic.

Another very important factor to consider in implementing this paradigm is the ability of payers and practitioners to convert current systems to another system that would allow the Consumer-Centric Paradigm to work. Not every organization and payer will be able to convert technology and not everyone will agree that the Consumer-Centric Paradigm is the solution to the problem. While there are many other resolutions that have

been offered concerning technology in the healthcare industry, most payers and practitioners are still struggling internally to cope with maintaining systems that are upgradable, and "user friendly". Until a realistic approach can be adopted so that patient's medical records are readily accessible to the patient, payer and practitioner, corporations and practitioners will continue to struggle with choosing software and equipment appropriate for the organization. In an article that examines computer literacy and resource management, one professional states that, "You can spend thousands of dollars on a new computer system to increase productivity. But if employees can't use it, or don't want to, all you've increased is the red ink in your ledger books" (Elliott, Robert H., Tevavichulada, Sirweal. "Computer literacy and human resource management: A public/private sector comparison". Public Personnel Management; Washington; Summer, 1999).

What makes for a successful implementation of software technology in the workplace? Of course the desire to learn the new software plays an important role, as well as the amount of training available to the employee. A study conducted by Elliott and Tevavichulada sought to examine the extent to which Human Resource Management (HRM) professionals in both the public and private sectors are using HRIS (Human Resource Information Systems) systems to carry on basic and advanced personnel processes and the extent to which they are employing the Internet as an information resource to help solve HRM problems. Through a national questionnaire, the study sought to examine the types of software applications currently in use, the integration of HRM activities and computer software rates of satisfaction through the use of HRM computer software. The rates of computer and Internet training across both sectors, and

the use of the Internet as an information resource in the HRM decision-making and problem solving process served as additional subjects explored in the survey.

Results demonstrated that the types of software applications utilized in both the public and private sectors were Windows programs for word processing, creating databases and spreadsheets. The extent to which organizations have integrated computer software into their HRM activities indicates that although private sector organizations have integrated HRM activities slightly more often than the public sector, no significant differences were detected. Regarding rates of satisfaction with use of computer software, the data indicate that HRM professionals who have merged the use of computer software and HRM functions are very satisfied. Both public and private sectors responded positively that they were satisfied with the software across all HRM functions. No significant difference was detected regarding training between the public and private sector. Concerning Internet training, there were significant differences between the two sectors with the public sector more likely to provide such training. The private sector appears to provide more training on a regular basis, whereas the public sector provided training on an as requested basis. Regarding Internet usage as a tool for decision-making and problem solving results indicated that few of the organizations sampled in either the public or private sector used the Internet for information. (Elliott, Robert H., Tevavichulada, Sirweal. "Computer literacy and human resource management: A public/private sector comparison". Public Personnel Management; Washington; Summer, 1999).

The study concerning technology and HRM practices was a good example of the advantages new software can add to the daily functions of an organization. The study

sought to provide evidence that through the use of new software and additional training, daily functions within the workplace can be improved. The goals of the study were clear, although some detail was lacking in measuring certain variables. For instance, the authors could have defined more clearly the definition of integration of HRM activities. With any study, it is important not only to clearly define the goals, but to have the ability to measure variables more precisely.

Since the basis of this study was directly related to those holding Human Resource positions, it was appropriate both to test only those persons holding HR positions and to perform the study via the survey. While the study does have limitations, the research serves as a good basis in the study of implementing computer technology in the workplace.

It is the issue of the implementation of new technology and the views expressed by those in management and non-management positions that will be the subject of this research. The following study proposes to answer the following questions: extent of efficiency, measuring work flow processes, perception of the amount of company resources utilized and the opinions of staff regarding the decision to use new software.

MHS (Managed Health System) is an application using AS400 technology that integrates patient case management, provider network management and claims data onto one software application. A managed care company in New York City implemented it on April 17, 2000. This research as performed by the survey instrument and administered during the month of October 2000, will explore the differences of opinion regarding software application as viewed by people in management and non-management positions.

Methodology

This research attempts to assess how those persons in senior management and non-management positions view the implementation of MHS. The data were collected via the survey instrument distributed to all staff of a managed care company located in New York City, NY. The survey was distributed on November 6, 2000. Employees were instructed to complete the survey according to the directions and return it to the Quality Management Department by the close of business November 7, 2000.

A bin was placed in an empty cubicle and was labeled "Quality Management Survey" so that employees would place completed surveys in the bin. Towards the close of business on November 7, 2000, the researcher visited each department to remind employees to hand in the surveys. At the close of business on November 7, 2000, all surveys were collected and put into a folder to be evaluated. Then data from the survey were analyzed.

Results

The following departments responded to the survey: customer service, clerical, other, claims, clinical, quality management, and provider relations. Ninety-five (95) surveys were distributed to staff, and twenty-nine (29) were completed and submitted giving a response rate of 31%. For a complete listing of the responses, please see Table 1 in the appendix section.

The first question of the survey, asked respondents if the decision to use MHS versus other applications was a good one. Of the six (6) surveys returned by senior management, 50% of the respondents agreed that using MHS was a good choice. Similarly, among the non-senior management respondents, a surprising 50% believed that using MHS was a good decision. Based on these results, the service center is still unsure if the decision to use MHS was good months after the implementation took place.

The second question asked if the decision to use MHS was part of a corporate strategy to cut costs. Only 33% of senior management were in agreement while 58% of non-senior management agreed that implementing MHS was part of a corporate plan to cut costs.

The third question asked if MHS was more efficient than the legacy system. Out of the six (6) senior management respondents, 83% agreed that MHS was a better system than the legacy system. Non-senior management responded with only 38% in agreement with the question. The majority of non-senior management (63%) felt that MHS was not more efficient than legacy systems.

The fourth question attempted to find out whether respondents noticed less downtime with MHS than with the legacy system. Fifty percent of senior management staff agreed that there was noticeably less downtime with MHS than other legacy

systems. Similarly, non-management staff was divided in their answers with 54% noticing less downtime with the new system, while 46% felt that they did not notice less downtime.

The fifth question asked if the user found MHS to be easier than the legacy system once they had mastered MHS. The majority of senior management respondents (66%) said that it was not easier to use MHS once it had been mastered. Similarly, the majority of non-management respondents (58%) felt that MHS was not easier to use than legacy systems once it had been mastered.

The sixth question concerned the amount of training received and whether or not the training provided was sufficient enough to enable users to feel comfortable working with the new system. The majority of senior management respondents (67%) felt that the training provided was not sufficient enough to enable users to feel comfortable working with the new system. Similarly, non-management staff overwhelmingly disagreed (71%) that enough training was provided so that users would feel comfortable with MHS.

The seventh question asked whether or not enough training and company resources had been used for the implementation of MHS. Senior management overwhelmingly agreed (83%) that enough company resources and training had been devoted to the implementation of MHS. However for those in non-management positions, 54% agreed that enough training and company resources had been used in order to implement MHS.

The eighth question asked the respondents if they felt the number of steps necessary to complete a transaction were greater or fewer than the legacy system. The majority of senior management (67%) felt that the number of steps had actually

increased, in order for a transaction to be completed. Again, they agreed. The majority of non-senior management (67%) believed that the number of steps for a transaction to be completed had increased.

The ninth question asked the respondent if the amount of company resources devoted to the implementation could have been better spent on other programs designed to improve the workplace. Senior management was divided on this question. Half (50%) of senior management agreed with the question. Non-senior management responded with 54% agreeing with the question.

The tenth question asked respondents how they felt concerning the overall efficiency of MHS. The majority of senior management (67%) agreed that MHS had proven itself in terms of efficiency. Fifty four percent of non-senior management respondents agreed.

The eleventh question asked the respondents to decide how each of the departments (claims, clinical and customer service) had fared since the implementation by checking "better" or "worse". Overall, senior management felt that the implementation of the system had an adverse effect in the claims, clinical and customer service departments. All of senior management felt that customer service had worsened as a result of the implementation. Also, in regards to the clinical department, all of the respondents except for one who did not answer the question felt that the clinical department had suffered. Senior management was divided in half with 50% of the respondents believing that claims had improved.

Non senior management believed that both the clinical and customer service departments had worsened. Only 38% felt that the clinical department had

improved. On the customer service side, 42% felt that customer service had improved. Regarding the claims department, a surprising 67% felt that it had improved.

Questions 12 through 14 asked the respondent for a description of the department they were employed in as well as the status (management, non-management) they held within the department. Six (6) of the respondents were from senior management and these respondents were in the following departments: provider relations, clinical, claims, quality management, and other. Those non-management respondents who answered the survey were in the following areas: administrative, clinical, claims, quality management, customer service, and provider relations.

The last question asked the respondent to list any suggestions they felt would improve MHS. Only 6 (six) respondents answered this question. One (1) was from senior management and the other five (5) were from non-management. The senior management response suggested that extra screens and fields be added onto the system, in order to improve work flows. The other responses ranged from going back to the legacy system, and deleting the amount of mandatory screens needed to complete a transaction.

Discussion

The purpose of this study was to assess the differences in opinion between those in senior management and non-senior management positions. As was mentioned in the introduction section of this paper, an organization can spend thousands of dollars on a computer system but if employees can't use it or don't want to, then all that has increased is the debt on the accounting books. This well thought out statement is interesting and is tied perfectly to the results of this study because as we look at the results, we see that there is some truth to the statement.

The results of the survey seem to indicate that months after the implementation had taken place, both groups could not assess whether the implementation had actually improved the working environment. What is so surprising about the results is that exactly half of management thought that migrating to MHS had been a good move while half did not agree, and the results are the same for non-senior management. One explanation for these results may be that if data are entered incorrectly into the system, then they cannot be reported correctly. Once this type of situation is identified, then it is the responsibility of staff to go back into the system, make corrections, while still performing their daily tasks. This has enormous implications since it may take weeks or even months to identify a situation as previously mentioned. During the time that it is unknown if staff is entering data incorrectly, once the data problem has been reported then thousands of records will then need to be cleaned up. This makes it difficult for staff because they then need to continue with their daily workflow while dealing with massive data clean-up issues. Once, the data has been "cleaned up" and staff has learned the correct way in which to enter data, MHS can be viewed as an efficient tool, but only if the system is used

correctly.

Questions regarding training and resource allocation are interesting to note because both senior management and non-senior management for the most part were in agreement that the training provided was not sufficient to enable users to feel comfortable with the system, as well as agreeing that the organization did all it could in providing enough training and resources for the implementation. The respondents, in answering these questions believe that the organization as a whole did its best in providing training for its staff, but that the training just wasn't good enough. Although these two groups differ in terms of their responsibilities, they can clearly see that training for the implementation was clearly lacking. This information can be of use to other service centers as they implement MHS to their specific geographic locations. They can assess current training practices and troubleshoot problems with the existing program.

It is also important to note that overall, senior management and non-senior management were in agreement with how the different departments had been affected with the implementation. Both groups agreed that the claims department was the only one that had improved as a result of the new systems implementation. Both groups also agreed that the clinical and customer service departments both suffered as a result of the implementation. One explanation for this is that, since there were thousands of records that needed to be "cleaned up", both the clinical and customer service departments may have seemed to worse off than claims, since there were no data issues within claims.

The study itself experienced time and money constraints. Had more time been allotted, a study could have been done to assess all service centers within the organization, that had completed implementation across the country. The survey could

then have been given twice, the first, administered six months after implementation, and then again once the service center had been using MHS for a year. Based on the results presented in this research, it seems as though senior and non-senior management were not sure whether the implementation of the system had been truly successful. Perhaps had more time elapsed, the answers to the survey may have been different. By presenting the survey at six months and then again after a year had passed to all service centers across the nation, a bigger sample will have been obtained as well as responses from different geographic locations. If other service centers were answering differently at six months and then a year after implementation, then perhaps other factors existed within the service center sampled that led to the results presented.

Aside from doing the research within the managed care setting, an interesting study would have been to compare systems implementation and the success of such an endeavor within a different industry such as a financial services organization. A comparison of these two types of organizations would allow the reader a better understanding of systems implementation as well as management and non-management views within two industries. This would give the reader some idea about issues that are exclusive to that particular industry, as well as issues that are uniform to both types of organizations.

Although there were time and money constraints involved in the study, other complications existed that may have played a role in the results of the study. The timeframe of one day in which employees had to complete the survey may have had an impact on the response rate. Due to staffing shortages, several employees may have viewed the survey as optional and not their priority of tasks to complete. Non-

management may have viewed the survey as one additional responsibility and in some cases may have caused resentment within the employee, and so as a means for retaliation, purposely did not complete the survey.

Another factor to consider in the results of this research is that some employees did complete the survey while the researcher waited by their desk. This may have caused some stress to the respondent as they knew that the researcher was anxiously waiting to obtain as many complete surveys as possible, and so they had they been given more time, they may have responded differently to the questions. Waiting for the respondent to finish completing the survey may have played a role in why there were so few responses to the last question (respondents were asked to list suggestions).

This survey attempted to gather some important information on software change and management versus non-management opinions. Although the study did experience time and money constraints, it did present some important information to the organization in terms of further development of the system as well as allowing management to better plan training and improving MHS. This information can also be used to open the lines of communication between both groups so as to better facilitate a more efficient working environment.

References

Anonymous; "Resort expands inhouse media center"; Lodging Hospitality; Cleveland; September 1, 2000; Copyright Penton Media, Inc.

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Table 1 Senior Management Responses to the survey.

Question	Provider Relations	Clinical	Customer Service	Claims	Quality Management	Other
1	D	A	A	A	D	D
2	D	D	D	D	A	A
3	A	A	A	A	D	A
5	A	A	D	D	D	D
6	D	A	D	A	D	D
7	A	A	A	A	D	A
8	G	G	G	F	F	G
9	A	A	A	D	D	D
10	D	D	A	A	A	A

A= Agree
D= Disagree
F= Fewer
G= Greater

N= 6

Table 2 Non-Management Responses to the survey

Question	Administrative Assistant	Claims	Clinical	Customer Service	Quality Management	Provider Relations	Row Total
1	0(A) 2(D)	2(A) 1(D)	4(A) 4(D)	3(A) 1(D)	2(A) 2(D)	1(A) 2(D)	24
2	1(A) 1(D)	2(A) 0(D)	6(A) 2(D)	3(A) 1(D)	1(A) 3(D)	2(A) 1(D)	23
3	1(A) 1(D)	2(A) 1(D)	3(A) 5(D)	2(A) 2(D)	0(A) 4(D)	1(A) 2(D)	24
4	0(A) 2(D)	2(A) 1(D)	2(A) 6(D)	2(A) 2(D)	4(A) 0(D)	3(A) 0(D)	24
5	1(A) 1(D)	0(A) 2(D)	3(A) 5(D)	2(A) 2(D)	2(A) 2(D)	1(A) 2(D)	23
6	0(A) 2(D)	1(A) 2(D)	4(A) 4(D)	1(A) 3(D)	0(A) 4(D)	1(A) 2(D)	24
7	1(A) 1(D)	2(A) 1(D)	4(A) 4(D)	2(A) 2(D)	3(A) 1(D)	1(A) 2(D)	24
8	2(G) 0(F)	3(G) 0(F)	3(G) 5(F)	2(G) 2(F)	4(G) 0(F)	2(G) 1(F)	24
9	1(A) 1(D)	2(A) 1(D)	3(A) 5(D)	4(A) 0(D)	2(A) 2(D)	1(A) 2(D)	24
10	1(A) 1(D)	2(A) 1(D)	5(A) 3(D)	2(A) 2(D)	2(A) 2(D)	1(A) 2(G)	24

A= Agree
D= Disagree
F= Fewer
G= Greater

Table 1 Senior and non-senior management percent that agree with survey questions

Questions	Senior Management	Non-Senior Management
1	50%	50%
2	33%	58%
3	83%	38%
4	50%	54%
5	34%	38%
6	33%	29%
7	83%	54%
8	33%	67%
9	50%	54%
10	67%	54%

N= 6

N=23