Identification and Conceptualization of Nurse Super Users

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ABSTRACT

The purpose of this study is to identify super users from the general nursing population of clinical information systems users. Q-methodology was employed to identify and categorize the viewpoints of the nurses toward the use of these systems. Four factors that represented different views regarding the use of clinical information systems were extracted. This study identifies super users’ perception and attitude toward the use of clinical information systems in the workplace. The current literature reflects a weak semantic structure for the term. Thus, the study assists with defining the term “super user.” Healthcare organizations can use this information to identify individuals who have the ability and attitude to function as a super user. These individuals can be more accurately and efficiently extracted from a general registered nurse population to give them more extensive training and to strategically position them within clinical operations.

KEYWORDS

• Clinical information systems • Super user • Human behavior • Education resources • Help desk • Information systems support • Q-methodology

During the past several years, the healthcare industry has extensively increased efforts to implement and use clinical information systems. This was emphasized by the Institute of Medicine report in 2000, To Err is Human, that estimated that 98,000 Americans may be killed each year from medical errors they experience during hospitalizations.1 There are more deaths in hospitals each year from medical errors than there are from vehicle accidents, breast cancer, and AIDS. As a result, most healthcare organizations have strategic initiatives to increase the utilization of clinical information technologies. While the industry is focused on clinical information systems, and current nursing computer users have developed a variety of skills to assist them in performing their work, there are still many users who lack experience with computers. Current nursing personnel who use clinical information systems have developed a larger technical skill set, but the casual or non-technically inclined user may not be
adapting well for anxiety-related reasons because of computer illiteracy or a lack of understanding or appreciation of how modern computer systems and technology may help with delivering patient care.7

This research study will focus on two groups of nursing users. One group will be clinical information systems users selected at random from a general nursing staff. The second group will be a comparison group of nursing super users identified by a clinical information system training team.

In the general population, adult workers have a variety of experiences in other related technical areas such as data entry, previous business experience, education or certificates in software applications that identify these computer users as being more technically skilled employees with particular value to the organization.8

Super users are typically identified as workers who have acquired sufficient skills to utilize modern day information systems applications. At times, these workers appear to know more about computer usage than the trainers themselves.9 These experienced users have the potential to advance into positions that facilitate the use of technical skills among their peers. With clinical information technology applications, experienced nursing users also can serve as resources and clinical technology mentors, extending their knowledge to inexperienced nursing computer users.

Super users have the ability to act as healthcare informatics resources that may reduce dependence on IT resources. If technically experienced nursing users have the ability to support and teach their skills, they can serve as clinical health informatics mentors, either directly on the patient care unit or within the IT support department. An identified super user who possesses the ability to mentor peers is an efficient and effective way to provide support in a provider's clinical environment.

An organization's IT support department frequently does not have the resources to provide adequate or timely support, and, as a result, it is often not effective in helping users. Nurses who are technically inexperienced often are informally and inefficiently paired with a peer mentor with the intent of helping them to become proficient with a particular computer application in a clinical working environment.10 This may work in the short-term to help the less experienced user, but it usually results in wide variations of computer use over time.

In the past, managers have been educated to perform advanced information system functions. "Health administrators were found to have a significantly higher training in computers, a higher frequency of use, and a higher level of skill for both applications in word processing and database use."11 The first clinical applications implemented in the healthcare industry were focused on communications and administration. Thus, most of the professional nursing staff did not need to be technologically competent other than for only casual computer use. However, as the industry demands more clinically oriented information technologies, a greater emphasis is being placed on the technical skill set in recruiting and retaining nursing personnel.

Nursing leadership must evaluate the idea of having experienced users as super users or clinical information technology mentors. The industry has realized significant skill set shortages within information technology support departments for clinical information systems and has identified the need for more advanced computer users among clinicians. If a healthcare organization decides to implement a clinical system, nursing staff users must adapt, thus supporting the need to identify more technically experienced super users to mentor and facilitate the clinical information systems working environment.

**"Super users have the ability to act as healthcare informatics resources that may reduce dependence on IT resources."**

Super users can be used as an extension of training. After computer training is complete, super users are the local resources for regular users to go to with questions after the trainers have finished and are no longer available.7

There are a variety of ideas and attitudes that are involved in identifying nursing super users who can facilitate the adaptation of a clinical information system. The nursing user may or may not have adequate information systems experience. The experienced nursing user may or may not care about supporting the clinical information system to enhance the overall clinical working environment. The technically-experienced nursing user should but does not always enjoy mentoring and helping peers better use clinical applications.

Early identification of both the technically-experienced nursing users as well as the technically-inexperienced computer nursing users could facilitate a more thoroughly and effectively automated clinical working environment and alleviate the need for comprehensive technology support from outside the clinical work setting.4

The nursing super user may have several individual traits, including different technical skill sets and a predisposition to mentorship. If a particular user is experienced and believes that supporting the clinical working environment is beneficial to the organization, then they may have greater potential to be a qualified super user. By contrast, users who may be experienced but do not believe that supporting their peers is beneficial may not be appropriate choices for mentors or nursing super users. In fact, they may be detrimental to the employee, peers, and ultimately, to the organization.
Defining the Terms

A review of literature found that super user and the characteristics of the super user are poorly defined terms. There have been attempts to vaguely define the characteristics of super users, but tools to identify them have not been widely utilized.

Nilsen and Sein (2002) stated there is a technical subculture of users in the clinical environment known as super users, who take on the responsibility of tasks previously held by IT staff. Also, super users have emerged as small informal help desks on designated clinical units. These users are viewed as resource persons after IT training as well as for ongoing user support in their individual work environments.

“If super users can be identified in the hiring process or at the initial phases of implementation, they can be groomed to support existing clinical information systems…”

Obviously, these informal super users emerge over time, but often they do not have adequate educational training or direction. As a result, the use of information systems becomes inconsistent throughout an organization because of the availability and level of utility or understanding of the informal super users. If these individuals could be identified early in their employment, they could receive supplemental training and direction to maximize the use of clinical information systems at a consistent level throughout the organization.

This research was conducted to show various clinical organizations that their own clinical personnel may or may not be appropriate super users of information systems among their peers. The methodology employed in the study is Q-methodology that utilizes a sort of statements (Q-sort). The result of the Q-sort can help identify ideal candidates as potential super users.

A recent study released by the Software Human Resource Council at The Education and The Innovation Symposium found that IT companies that embrace literacy skills training are the most effective … companies with literacy strategies are more productive, agile, and are better equipped to move with the shifts in the marketplace.”15 Knowledgeable and literate clinician computer users are becoming critical components to the success of every healthcare organization as the delivery of patient care evolves toward greater dependence on information technology.

Obviously, in light of the need to collect and manage critical data in the clinical arena as well as the complexity of modern software, it is crucial to identify experienced computer users who possess the desire to become super users. They can take on the daily tasks that often have to be raised to management levels or communicated to technically-staffed departments, such as IT help desks.

If super users can be identified in the hiring process or at the initial phases of implementation, they can be groomed to support existing clinical information systems, and they may be able to transition into technical liaison capacities that will bridge the gap between clinical and technical departments.6 Super users can mentor peers and associates that are technically inexperienced and need real-time assistance. Also, they may drastically reduce the need for outside technical support departments.13

The purpose of this research is to uncover the ideas held by registered nurses regarding the use of clinical information systems in their work settings. It also aims to identify clinical information system users who have the ability to accept increased responsibilities and become super users in the clinical operating environment. The researchers anticipate that the super users the project identifies will share one or more common ideas, characteristics, or factor arrays that will help identify future super users.

Research Method

Q-methodology is the statistical technique chosen for this study. This technique is a powerful tool used to analyze ideas, perceptions, and attitudes in an objective way. The major concern of Q-methodology is not to quantify how many people believe certain ideas, but to identify why and how they believe the way they do.

Psychologist-physicist William Stephenson first introduced Q-methodology in the 1930s. This technique combines qualitative and quantitative research to permit the systematic study of subjectivity. Q-methodology determines and identifies the range of ideas regarding a specific question under investigation while it segregates groups of individuals with similar subjective viewpoints.15

Q-methodology is an appropriate analysis tool because of the small sample size and the need to extract the most common ideas shared by a population. The qualitative analysis incorporated in the Q-methodology accommodates the extraction of the subjects’ expressed attitudes, ideas, and characteristics. The use of the method enables factor analysis of the most commonly formulated opinions identified after data collection.13

Data analysis includes Pearson’s correlation coefficient, factor analysis, and factor rotation. The correlation coefficient between two sorters indicates the extent to which their viewpoints are similarly expressed by their Q-sorts. The inter-correlation matrix of Q-sorts then is subjected to individual person factor analysis. The factor analysis procedure identifies groups of individuals with similar viewpoints.14 Factor rotation enables researchers to look at other possibilities for developing groups.
of common opinions, 24 statements were selected as the Q-sample (see Appendix).

A survey was distributed in a large urban academic medical center to registered nurses on staff who had at least one year of experience with clinical information systems implemented at the medical center. A total of 27 registered nurses responded, including six previously identified as super users. Participants ranked-ordered the 24 statements of the Q-sample after receiving the following instruction:

“Which statements would you consider important or not so important when you think about how you use the clinical information system while working at the hospital?” They then completed the grid on an answer sheet (see Appendix). Each sort was encoded to identify the subject completing the Q-sort as either a staff user or a super user.

For this study, the two factors that were determined to be the most important received a score of +3; the next three scores received a score of +2; and so forth, down to the two statements that were determined to be the least important, which received scores of -3. Statements placed in the middle of the bell-shaped curve by subjects received scores of 0, meaning participants were neutral in their feelings about the statements.

### Results of Responses

Q sorts were collected from 21 staff registered nurses and 6 super users in December 2004. All participants were from a single, large, urban, academic medical center.

Following the guidelines for Q-factor analysis, Varimax rotation calculated by the PQMethod software extracted four factor arrays, or opinion types, that represented four different views regarding perceptions and attitudes on the use of clinical information systems in the clinical work setting. A manual rotation of the data using the QROTATE procedure was not used to minimize variation because the PQMethod software optimally flagged the data into four factors that explained 72 percent of the total variance among participants (see Table 1A).

The table shows that 25 of the 27 persons who participated in the study had their opinions represented within

<table>
<thead>
<tr>
<th>Four Factor Matrix with an X Indicating a Defining Sort Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>QSORT</strong></td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>1 Regsort 1</td>
</tr>
<tr>
<td>2 Regsort 2</td>
</tr>
<tr>
<td>3 Regsort 3</td>
</tr>
<tr>
<td>4 Regsort 4</td>
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<tr>
<td>5 Regsort 5</td>
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<td>6 Regsort 6</td>
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<td>7 Regsort 7</td>
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<td>8 Regsort 8</td>
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<td>9 Regsort 9</td>
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<td>10 Regsort 10</td>
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<td>11 Regsort 11</td>
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<td>12 Regsort 12</td>
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<td>25 SU25</td>
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<tr>
<td>26 SU26</td>
</tr>
<tr>
<td>27 SU27</td>
</tr>
</tbody>
</table>

| % exp Var | 47 | 11 | 11 | 8 |

Table 1A. Correlation Matrix of the Twenty Seven (27) Surveys

The first twenty one (21) surveys are regular nursing users. The surveys numbered twenty two (22) through twenty seven (27) are pre-identified nursing information system trainers. An "X" next to the survey number indicates a high correlation amongst all the surveys. Column number one (1) The “Super User” column has the largest number of correlated surveys or half (11/21) regular nursing users. Remarkably the nurse trainers are surveys twenty two (22) through twenty seven (27) all have an “X” under the “Super User” column which places their surveys in the most appropriate column for a nurse information system trainer.

The remaining surveys have high correlations (marked with an “X”) along the last three (3) columns. Therefore these users are either computer resistant, reluctant user or an independent clinician. What the remaining users have not correlated strongly with is the “Super User” column.

For this study, a list of subjective statements expressing common ideas about the use of automation in the workplace was created based on a literature review and input from hospital and academic professionals familiar with the use and development of super users. From this list
### Factor Arrays

<table>
<thead>
<tr>
<th>No.</th>
<th>Statement</th>
<th>No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>There is always a problem with the clinical info syst.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>&gt;3</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I feel the clinical info syst slows down my workflow</td>
<td>-1</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>&gt;3</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I feel I learn information syst applications smoothly</td>
<td>2</td>
<td>0</td>
<td>-1</td>
<td>1</td>
<td>&gt;3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>My peers feel comfort coming lor assist on use info syst.</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>&gt;3</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I feel the clinical info sits at work is beneficial</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>&gt;3</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I enjoy helping others use the clinical info syst.</td>
<td>1</td>
<td>-1</td>
<td>0</td>
<td>1</td>
<td>&gt;3</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>When I figure out a fix I share the info with night and peers.</td>
<td>2</td>
<td>-1</td>
<td>2</td>
<td>1</td>
<td>&gt;3</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>I have minimal questions when I use the clin info syst.</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>&lt;3</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>It makes no diff whether I use systems at work.</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>&gt;3</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>I would be irritated if I had to answer computer quest.</td>
<td>-2</td>
<td>0</td>
<td>3</td>
<td>&gt;3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>I need assistance with the clin info syst at work.</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>&gt;3</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>I don't need help I can use the computer sys at work func.</td>
<td>0</td>
<td>-3</td>
<td>-2</td>
<td>3</td>
<td>&gt;3</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>I'm an RN b/c I care for sick people &amp; not use a computer</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>&gt;3</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>I'm not tech and find it hard to use a clin info syst.</td>
<td>-2</td>
<td>0</td>
<td>1</td>
<td>&gt;3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>I dislike computers &amp; would prefer not using them.</td>
<td>-3</td>
<td>3</td>
<td>3</td>
<td>-1</td>
<td>&gt;3</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>I prefer to figure how to use the clin applic on my own.</td>
<td>0</td>
<td>-2</td>
<td>-1</td>
<td>-1</td>
<td>&gt;3</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>I want to go back using pen and paper instead of comp.</td>
<td>-3</td>
<td>2</td>
<td>-2</td>
<td>-3</td>
<td>&gt;3</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>I should not help w/ clin info b/c they should know.</td>
<td>-2</td>
<td>-2</td>
<td>0</td>
<td>0</td>
<td>&gt;3</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>I prefer to work alone &amp; handle my caseload w/o assist.</td>
<td>-1</td>
<td>0</td>
<td>-1</td>
<td>0</td>
<td>&lt;3</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>I don't answer simple redundant questions from peers.</td>
<td>-1</td>
<td>1</td>
<td>-1</td>
<td>-1</td>
<td>&gt;3</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>I like to assist peers when have prob using computer.</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>&lt;3</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>I feel the clin info syst at wrk is import w/ doing work.</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>&gt;3</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>I am exposed to persons in comput &amp; feel comfort w/ them.</td>
<td>1</td>
<td>2</td>
<td>-3</td>
<td>-2</td>
<td>&gt;3</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>I have taken informatics courses while obtaining my RN.</td>
<td>0</td>
<td>-2</td>
<td>-3</td>
<td>-2</td>
<td>&gt;3</td>
<td></td>
</tr>
</tbody>
</table>

### Factor Characteristics

- **Factors:** 1 2 3 4
- **No. of Defining Variables:** 17 3 3 2
- **Average Rel. Coef.:** 0.800 0.800 0.800 0.800
- **Composite Reliability:** 0.986 0.923 0.923 0.889 98.6% 92.3% 92.3% 88.9%
- **S.E. of Factor Scores:** 0.120 0.277 0.277 0.333

**Table 1B. Factor Q-Sort Values for Statements sorted by Consensus vs. Disagreement (Variance across normalized Factor Scores)**

The four defined factors. This is a significantly high definition for the four-factor rotation and illustrates that the Q-sample in this study defined the vast majority of possible opinions in the general nursing population regarding this topic.

There were 17 defining variables for Factor One, three
each for Factors Two and Three, and two for Factor Four. The composite reliability for Factor One is 0.986, meaning that if the test was conducted again, there would be a 1.4 percent chance that Factor One would be different. Factors Two and Three have composite reliabilities of 0.923, and Factor Four has a composite reliability of 0.889. These are generally considered very high composite reliabilities and add significant credibility to the factors (See Table 1B).

Factor One identified the most flagged sorts. Because the researcher knew which sorts were completed by the super users and which were done by regular users, the super user group unanimously fits into Factor One and shares common ideas. Additionally, 11 out of 21 regular users also were flagged in Factor One and share a common opinion set with the super user group.

There are three strongly correlated flagged sorts in both Factors Two and Three. Although two sorts were flagged for Factor Four, a distinct difference exists when it is compared with the other factors (see Table 1A).

The PQMethod software analysis identifies those statements that differentiate one factor from another. Factor One, which includes all of the identified super users, demonstrates that subjects believe that the clinical information system is a beneficial tool (see Table 1B, statement 5, Q-sort value +3) and important to their work (statement 22, +3). The subjects generally believe that they learn the clinical application smoothly (statement 3, +2) and expressed positive feelings about sharing newly-learned functions with peers and management (statement 7, +2).

Distinguishing characteristics of Factor One are that subjects generally do not mind answering computer questions (statement 10, -2), do not find it difficult to use the clinical information systems (statement 14, -2) and do not believe that information systems slow down their work (statement 2, -1). These are significant traits that correlate with the expected attitudes of the super user group. As a result, the researchers labeled Factor One as super users (see Table 1B, Factor Array 1).

Factor Two showed resistance in that subjects believe that the system actually slowed work (statement 2, +3) and prefer to revert back to using pen and paper (statement 17, +2). The latter point demonstrating a preference for pen and paper is a distinguishing characteristic of this factor. For this reason, the researchers labeled Factor Two as computer-resistant users (see Table 1B, Factor Array 2).

Factor Three showed that subjects dislike the computer system. They believe that there were problems with the clinical information systems (statement 1, +2) and were neutral about their comfort level when asked for assistance with the systems by their peers (statement 4, 0). Distinguishing characteristics for this factor are that subjects believe strongly that they need assistance with clinical information systems (statement 11, +2), and they have a dislike for computers and would prefer to not use them (statement 15, +3). In fact, Factor Three subjects, unlike those in the other factors, were the only ones that believed these two distinguishing characteristics were most important. For this reason, the researchers labeled Factor Three as reluctant users (see Table 1B, Factor Array 3).

Factor Four showed an overall independence from the clinical information system with high opinion of a nursing identity. The subjects in this factor felt bothered if they had to answer computer-related questions (statement 10, +3) and had a strong preference to work as a nurse and not as a computer person (see statement 13, +2). There was a clear preference of working independently (statement 12, +3) as a distinguishing characteristic for this factor. The researchers labeled Factor Four as independent nurses (see Table 1B, Factor Array 4).

Discussion of Results

As the healthcare industry now emphasizes the use of clinical information systems, the return on investment for these systems is critical to the viability of most healthcare organizations. With reimbursements being diminished, capital becoming scarce, and skilled resources in demand, the availability of knowledgeable resources that are immediately available for advice is critical to the successful use of these systems.

“…many believe that peer resources, working side-by-side with other less-experienced personnel, can be more comfortably approached with questions.”

Because clinical activity occurs around the clock, limited availability of help desk personnel can make it difficult to provide the support required to ensure maximum utilization of clinical information systems. As a result, having resources available for immediate problem solving is essential to ensure that these systems are used to their full potential.

Further, many believe that peer resources, working side-by-side with other less-experienced personnel, can be more comfortably approached with questions. They are also on the floor and quicker to respond, compared with asking the information systems department’s help desk and then potentially waiting for an answer.

Strategically positioning super users in a healthcare organization could significantly increase nurses’ overall satisfaction with clinical information systems and maximize these systems’ ability to deliver efficient and effective patient care. Further, identifying these super users soon after they are hired and giving them the extra training and attention to make them the best users possible will help
ensure that their shift assignments and responsibilities optimally take advantage of their unique skill sets.

The researchers noted distinct differences across the four factors. Factor One is the most significant and defines a clear picture of the ideas and characteristics a super user should possess. These users need to demonstrate a mentoring personality and feel comfortable with assisting others with their computer-related difficulties. They need an inherent enthusiasm in using clinical information systems and a desire to learn as much as possible about how these systems can be used as tools in delivering patient care. They see technology as beneficial and do not see technology as a threat to their careers. They see their careers advancing through the use of technology and are willing to share their positive technology experiences with management and peers.

A nurse super user believes that a clinical information system is not only beneficial to delivering patient care but also is important in performing nursing work tasks. These super users not only believe that they learned the clinical application easily but also share the functionality that they have learned with management and peers, and they enjoy helping others use clinical computer applications. Other staff nurses are comfortable asking super users for assistance.

Super user nurses are not necessarily exposed to nursing informatics coursework. The researchers conclude the nurse super user possesses a dual skill set that includes the personality and the ability to act as a clinical information technology specialist as well as a caregiver to patients.

As clinicians, super users desire immediate responses from their actions, the researchers found. The nature of clinicians' work is to make quick but well-educated and well-intended decisions, and to document their activities with as little additional effort as possible. Clinicians need to believe that they are in control. When they have a question, they go to a respected source and often get an immediate answer. When they have questions about clinical information systems, their experiences should not be any different.

User frustrations with installed computer systems run counter to the personalities of most clinicians and often contribute to poor utilization and negative attitudes about the systems. Even the best systems that have been successfully installed in a number of customer sites will fail because of poor post-installation user support and resulting user frustration. The healthcare industry has experienced too many IT failures and must take steps to enhance the return on its IT investments. A formal super users program, along with an emphasis on utilizing these individuals at a higher level to enhance the use of the implemented technology, will go a long way toward increasing returns on technology investments.

The next two factors, Computer-Resistant Users and Reluctant Users, are distinctly different than Factor One and each other. Neither of these factors have the personality to be good super users. While computer-resistant users would prefer to use pencil and paper and often express frustration with clinical information systems, they are willing to share knowledge under the right conditions. These individuals are likely to be the first to complain when problems occur and would not demonstrate the enthusiasm, patience, and compassion needed to accommodate systems-related difficulties.

On the other hand, reluctant users would prefer to practice nursing the traditional way and not bother with technology. They need assistance using clinical information systems and most likely will learn just enough about the system to achieve minimal competency. They may believe there is a benefit to clinical information systems but would prefer to have someone else use them. Obviously, Factor Two and Factor Three individuals are not good super user candidates.

Factor Four, independent nurses, is quite different than the other factors. These individuals tend to focus more on nursing as a profession and may believe that patient care is the most important activity for a nurse. They prefer not to be bothered with computer-related questions and desire to work by themselves. Although they may be good clinical information systems users, they are generally not good super user candidates.

Generally speaking, nursing personnel believe that a clinical information system is an important tool in delivering patient care (statement 22, Table 1B). This could be explained by the fact that they were exposed to clinical information systems for at least one year as a requirement of the study and have learned to work with the technology in a patient care environment. Further, they may have realized and accepted the fact that the future delivery of patient care will involve information technology. Their attitude toward such systems is a crucial differentiator, and it affects their ability to be a valuable support resource for others.

The success of super users depends on their ability and willingness to offer assistance to peers in the work environment. Statements such as, “I am not going to help them because they never learned how to utilize the system properly,” or “How can I help others around me?” have been verbalized by nursing experienced users expressing frustrations with inexperienced computer users who need additional computer assistance. Therefore, the early identification of willing and able computer users who can assist peers in the clinical environment potentially may help the healthcare organization.

Individuals who have the ability to become super users can be identified at the beginning of employment and subsequently exposed to more advanced systems training so they can maximize their abilities to master IT systems.
Conclusion

Results of the study identify the ideas and personality characteristics that a candidate must possess to be considered a potential super user and, conversely, they also identify the attitudes and personality characteristics of individuals who may not be good candidates for a role as a super user. As a result of this project, researchers documented a more formal understanding of the often-vague and misused term super user.

Although this study focused on the general nursing population in an urban academic hospital environment, the study and its methodology may be applied to all clinical environments in a variety of settings. This adds to the body of knowledge regarding identification and usage of clinical and non-clinical super users. An important characteristic of Q-methodology is that different people with different backgrounds can be surveyed using the same Q-sample; for example, this tool can be utilized for other clinical disciplines. Additionally, the Q-sample can be reworded to fit the needs of other industries to assess computer skills and the ability or personality traits needed by super users.

This study helps define the personality characteristics for a super user because the current literature reflects a weak semantic structure for the term. A better conceptualization of the applicable practices and personality traits that a super user must possess may refine job descriptions and potentially reduce the need for help desk personnel to be available and conversant in complex clinical applications.

Using these tools, nurse administrators can identify staff members who have the willingness and ability to be part of the front-line activities that support present and future clinical application implementations. These activities may include involvement in evaluating and assessing new software, incorporating new functionality into user workflow, providing input to the design of a new system, and planning and conducting training programs, among other activities.

A nurse identified as a super user can function as a resource person on the floor who can reduce the load on the information system department’s help desk. Ultimately, nurses identified as super users may act as clinical informatics liaisons between clinical operations and the information systems department.

The current literature on the subject and utility of super users is limited and does not include an adequate formal definition to develop a thorough understanding of the term as it is applied in operational use. This study was designed to not only identify specific individuals from a nursing population who have the mentality and characteristic set of a super user, but also to build a working definition of the term.

Q-methodology is different from ordinary surveys, which require a large sample size to derive valid results. Using Q-methodology, sample sizes are defined statistically in terms of the number of statements to be sorted rather than the number of respondents making the sort. In this study of 27 registered nurse personnel from a large urban academic medical center, varying viewpoints were extracted. If researchers determined there is a need to understand the distribution of these viewpoints, or if there was merit in expanding the results to additional healthcare organizations, more participants should be surveyed.

In the near term, nursing administrators should consider the potential opportunity for assigning personnel with adequate skill sets and backgrounds to super user roles and responsibilities as the organization strives to maximize the utilization of clinical information systems.

About the Authors

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References


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**Appendix: Q-Sample statements and Sorting Grid.**

Look over all the statements to familiarize yourself with the range of user feelings to be evaluated.

1. There is always a problem with the clinical application system.
2. I feel the clinical application slows my workflow down.
3. I feel I learn information systems applications smoothly.
4. My peers feel comfortable coming to me for assistance on how to use the clinical information systems at work.
5. I feel the clinical information system at work is beneficial.
6. I enjoy helping others use the clinical information system.
7. When I figure out a new function with the clinical application, I always share the information with my management and peers.
8. I have minimal questions when I use the clinical information system at work.
9. It makes no difference to me whether I use or don't use a clinical information system at work.
10. I would be irritated if I had to regularly answer computer questions at work.
11. I need more assistance with the clinical information system at work.
12. I don't need anyone to tell me how to use the computer system at work, I can use it by myself just fine.
13. I became a nurse because I like caring for sick persons and not necessarily to use a computer system in order to do so.
14. I am not very technical and find it difficult to use the clinical information system at work.
15. I dislike computers (anxiety, fear, complexity) and would prefer not using them at all.
16. I would prefer to figure out how to use the clinical application at work when I am unsure rather than ask others how to use it.
17. I would like to go back to using pen and paper at work instead of using a computer.
18. I don't feel I should help other workers with the clinical information system because they should know how to use the system by now.
19. I prefer to work alone and handle my caseload without assistance from other peers.
20. I don't like answering simple redundant questions from my peers.
21. I like to assist my peers when they are having problems using the computer system at work.
22. I feel my present clinical information system at work is important in performing my working duties.
23. I am exposed to people in the computer industry (spouse, child, friends, etc.) and feel comfortable with computer systems.
24. I have taken informatics courses while obtaining my Nursing Degree.

Which statements would you consider important or not so important when you think about how you use the clinical information system while working in the hospital?

Participants will sort statements in order based on which are Most Important and which are Most Unimportant and place the numbers in the sorting grid below.