Adaptation of an Instrument to Measure Attitudes Toward the Implementation of an Electronic Medical Record

by

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Abstract

BACKGROUND: Measurement of attitudes toward the implementation of an electronic medical record (EMR) could help in planning the implementation process and schedule. For example, roll out of the system might be carried out first in the clinics where the clinic staff are found to have more positive attitudes towards the implementation. OBJECTIVE: To adapt a survey instrument that can measure pre-implementation attitudes of potential end users toward the implementation of an EMR, carry out a measurement study to establish the reliability and validity of this instrument and to determine whether the factors in this instrument correlate with readiness or not. PARTICIPANTS: The survey was carried out among clinic staff in six clinics, three of which were judged to be ready for implementation by an external judge and another three that served as controls. METHOD: Assessed reliability and validity of the modified instrument and used an ANOVA model to identify significant differences between the clinics. RESULTS: Five of the seven factors examined had satisfactory reliability. None of these factors were associated with readiness as determined by an external judge. CONCLUSIONS: The instrument had good reliability for measuring five of the seven factors. The factors were not associated with readiness, perhaps because the study had low power. Further study with an improved instrument and higher power is needed.

Introduction:

" Clinical Information systems represent the toughest application of information technology because it involves the most complex system – *the human body*. It must also deal with the second most complex system – *the health care delivery system.* "

Margret Amatayakul [1]

One of the reasons that the medical field is behind other disciplines in incorporating information technology and computerization is not the lack of technology, but the change management involved [2]. Finding a good fit and compatibility between the health organization and the clinical information system being implemented is an important key to success. As Nordyke and Kulilowski note, " Success comes from choosing a level of technology that matches the information needs of a clinical practice, rather than adopting whatever current technology has to offer." [3]

Realization of an electronic medical record (EMR) is a goal shared by many healthcare organizations and its potential benefits are generally recognized throughout the health care industry especially after theInstitute of Medicine findings [4] and the Leapfrog report [5]. However, there are few healthcare organizations that have made significant progress in fully implementing an EMR [6]. There are many cases of failures and few of successes [2]. The variation in practice and orientation among health care providers means that there cannot be a single design or strategy that can be successfully applied to all the

different clinics and departments. Due to the varying needs, work processes and culture of each department or clinic, an appropriate roll out strategy needs to be individually designed.

Literature clearly shows that the expectations and experiences of end users are important considerations in accomplishing successful implementation of clinical information systems. Studies by Kraemer & Dutton [7] and Aydin & Rice [8] illustrate those users who hold realistic expectations about the information system before the implementation use the system better and are more satisfied with it, while those with unrealistic expectations of the system are disillusioned.

Background and Significance

Oregon Health & Science University (OHSU) has been preparing to implement an ambulatory electronic medical record system. The system will initially be test piloted in three clinics. Once successful pilots have been completed in these three clinics, the EMR will then be rolled out to other OHSU clinics in a phased manner. This process provides an excellent opportunity to carry out pre- and post-implementation evaluations of the EMR system and the implementation process.

Research Objective:

The objectives of this study are 1) to adapt a survey instrument that measures attitudes of potential end users toward the implementation of an EMR before the implementation 2) to carry out a measurement study to establish the reliability and explore the validity of this instrument and 3) to determine whether the factors in this instrument correlate with readiness or not.

Significance:

The significance of this study is as follows:

A valid and reliable instrument will be developed for measuring attitudes toward the implementation of an EMR. Depending on the attitudes of the clinic staff, the implementation of the EMR can be planned in a phased manner, with appropriate strategies. Those clinics found to have the majority of the clinic staff positive towards the EMR would be the first to undergo implementation of the EMR, while the other clinics could undergo education and training about the EMR in an attempt to get these clinics to have a positive attitude toward the EMR. These other clinics would then undergo later implementation.

This study will also provide a baseline for comparison with post-implementation studies.

Previous Studies:

In the last five years many studies have been carried out to assess the attitudes of users toward the electronic medical record.

Marshall and Chin did a study [9] to examine the attitudes of clinicians towards an electronic medical record (EMR) and a results reporting system (RRS) in a large health maitenance organization (Kaiser Permanente Northwest). Effects on quality of patient care and attitudes were compared between the online charting and ordering system, i.e. the EMR, and the results reporting system. The study included a 65-question survey asking about background information, computer experience and perceptions of the impact of the EMR and RRS on patient care, in addition to interviews with physician leaders. No details on testing the reliability or validity of the survey instrument are mentioned. The results conclude that clinicians perceive an improvement in patient care because of the EMR system and that the clinicians have a higher opinion of the effects of the result reporting system compared to an online charting and ordering system.

CorkDetmer and Friedman designed and validated an instrument [10] to measure physicians' use of, knowledge about and attitudes toward computers.
This instrument is a survey that measures four attributes: 1.Computer use, 2.Self reported computer knowledge, 3.Computer feature demand, and 4.Computer optimism. The survey was developed as a questionnaire based on the instrument developed by Teach and Shortliffe [11]. To develop the instrument, a six-member group experienced in medical

informatics and measurement techniques engaged in an item-design process and conceptualized the above-mentioned attributes. Analysis was carried out on the responses of 771 full time academic physicians from across five academic medical centers in the United States. The dimensionality of each scale and degree of association of each item with the attribute of interest were determined by principal components factor analysis with orthogonal varimax rotation. Items that had weak association were deleted. The reliability of the resulting item set for each attribute was then determined using Cronbach's alpha coefficient. Content validity was addressed through the development process since this survey was constructed by experts. Construct validity was established in part through the factor analysis and in part through a set of correlational analyses that were done. The design and validation of this instrument seems to be among the most comprehensive and complete, with reliability and validity being well established. Only criterion related validity was not established, probably because of the unavailability of a proper external standard to compare with.

Gadd and Penrod did a study [12] where they used validated instruments to assess attitudes of physicians toward the EMR both pre-implementation and six months post implementation. The objectives of the study were to assess the attitudes and examine factors influencing the attitudes toward the EMR. The study was conducted in six outpatient clinics in a large academic institution. The instrument used for the pre-implementation study was the validated instrument developed by Cork, et al [10] (as mentioned above). Additional items were developed for this study to assess physicians' attitudes toward the EMR's effect on their medical practice, adapted from the computer

optimism scale of Cork, et al and from results of published studies on physicians' attitudes towards EMR use. A single factor, 18-item scale was created to measure the " EMR optimism" attribute with a reliability of .91 and which explained 40.71 % of the total variance. The post-implementation instrument had two additional factors developed, the single factor 18-item "EMR functionality" scale and the single factor 10-item "EMR satisfaction" scale. Description of the assessment of their measurement properties is not given in this paper. The results were calculated with time as the independent variable and independent sample t-tests were used to test for differences. The study concludes that 1.Physicians are ready adopters of computer technology when there is demonstrated value addition for the effort required to use it. 2.Critical to the acceptance of the EMR by physicians is facilitation of efficient clinical workflows, with no negative effects on the physician-patient relationship based on rapport, quality of care and privacy.

In another study [13] by Gadd and Penrod, they compared attitudes towards the EMR between physicians from different settings. The objective of the study was to compare and contrast the attitudes of academic-based physicians with community based physicians toward the EMR six months after implementation. The study was conducted in the academic-based general internal medicine clinic and a community-based university-affiliated primary care clinic. The instrument used was the post-implementation instrument described in the above preceding study. The finding shows that both groups endorse improvements in quality and communications with the use of the EMR. They both also share concerns regarding loss of rapport with the patient and privacy. The

academic-based physicians use computers for a wider range of activities. The community physicians were much more positive about the impact of the EMR on clinical workflow.

Another study [14] by Gadd and Penrod assessed patients' satisfaction with their outpatient encounters in the clinic after implementation, including general and EMR-specific factors. A survey instrument for measuring patient attitudes was developed and validated. The instrument was based on existing patient satisfaction surveys and published studies on patient attitudes toward the EMR. Two factors were measured: 1. General Satisfaction, which consisted of 10 items, and 2.Physicians' Computer Use, which consisted of 5 items. Details of how the instrument was validated are not mentioned. There were 165 usable responses. The results showed that patients were very satisfied with medical care on the General Satisfaction Scale. The Physician Computer Use scale showed little impact of the EMR on patient satisfaction. Patients reported that they did not perceive any loss of communication or eye contact with the physician because of the EMR. Since details of the instrument's validation are not given a critique of this instrument cannot be made.

A study [15] by Loomis, Ries, Saywell and Thakker was done among members of the Indiana Academy of Family Physicians, to investigate possible differences in attitudes and beliefs about electronic medical records between users and non-users. They designed a 53-item questionnaire based on the principles outlined in the 1991 Institute of Medicine report on patient records. The questionnaire had three parts. The first section was about demographics and use of computer technology. The second part asked questions about

the respondent's attitudes and beliefs about the EMR. The third section used multiple-choice questions to evaluate specific information technology needs and preferences of family physicians. The instrument's reliability was calculated by the test and retest method done on ten resident physicians and generated a reliability rate higher than 80%. Six physicians who were medical informatics experts screened the survey instrument for content validity. Twelve family physicians reviewed the instrument for structure, clarity and relevance to test for face validity. Results were calculated with 618 usable responses. Tests for significance were done using chi-square tests and the z-test of proportions. The findings show that non-users of the EMR when compared to users were significantly less likely to believe 1.that physicians should computerize medical records, 2.that EMRs improve quality of medical records and decrease errors and 3.that it is easy to enter data into EMRs. This instrument's reliability is established, but validity is questionable, as only content validity was established. Neither criterion related validity nor construct validity was established.

A study [16] by Aaronson, Murphy-Cullen, Chop, and Frey was done to determine the attitudes of family practice residents toward the EMR and to establish the variables that influenced these perceptions. Specifically, the influence of previous computer background and EMR training on acceptance of the EMR implementation, health maintenance of patients, efficiency with regard to time, accuracy of the medical record and desire to use the EMR in the future were studied. A 15-question survey instrument was developed by the authors to gather information about the possible effects of the EMR in three areas 1. Accuracy of the recording of the patient-physician encounters 2. The

delivery of preventive care and health maintenance and 3. Time efficiency. Additional questions asked about previous computer experience, EMR training, and future use of the EMR. Details of how the reliability or validity of the instrument was tested and established are not mentioned. Data analysis of 244 usable surveys was done with reliability coefficients (Cronbach's alpha) calculated for each of the subsets – accuracy, time and prevention. Statistical significance was assessed using chi-square test for associations, t tests for independent variables and Pearson Correlation. The findings led to the conclusion that residents who felt that the training was adequate have a positive attitude toward the benefits of the EMR with regard to time, health maintenance and accuracy of medical records.

In 1975, Schultz and Slevin[17] developed a survey instrument to measure pre-implementation attitudes toward an innovation, in this case a sales forecasting model called "FORECAST". This survey instrument is specifically designed for measuring attitudes before implementation, but can be used post- implementation also (with some modifications).

Design of the instrument:

Schultz and Slevin examined 230 organizational variables, out of which they judged 81 to be relevant as input variables for the implementation of an innovation in an organization. They generated the first draft of the instrument, composed of 81 Likert-scale questions. The statements were worded such that they referred to what would happen as a result of the implementation, followed by a five point bipolar scale for responses- from strongly agree to strongly disagree.

This first draft was pilot tested on MBA students, with 136 returning usable completed surveys. Factor analysis was performed on these responses. Based on the factor analysis and feedback from domain expert judges, half the original items were dropped or modified and a number of new items were added. A final Likert scale instrument consisting of 67 questions was then produced. Five dependent variables were added for correlation between attitudinal factors of the respondent and stated likelihood of use by them.

This final instrument was then field tested in a large manufacturing company that was going to implement a computer system to forecast sales. The sample consisted of 106 managers and staff assistants, from whom 94 usable responses were received. Factor analysis of these 94 responses resulted in seven meaningful attitudinal factors with reasonable separation and accounting for 49 percent of the total variance, which was satisfactory for evaluating attitudes toward an implementation. Of the initial 67 Likert items in the final instrument, 10 were discarded because of low factor loading. The remaining 57 Likert items were divided among the seven factors; depending on which one they loaded to significantly. These final seven factors are performance, interpersonal, changes, goals, support/resistance, client/implementer and urgency.

Anderson, Aydin and Jay have suggested that this Schultz and Slevin instrument be tested in the field of health information systems [18]. A thorough search of the literature found no published work that studies or uses this instrument in the health information systems field. Hence, this study investigates the adaptation of this instrument to measure attitudes toward the implementation of an EMR.

From the above studies it is clear that an instrument that has proven reliability and validity to measure attitudes toward the implementation of an EMR would be most useful. For validity, it is not enough to establish content validity alone, but also criterion related validity and/or construct validity. Hence, the instrument developed by Cork et al[10] has been used in other studies. In this study the reliability and validity of the Schultz and Slevin instrument will be investigated.

This Study

For an innovation to be implemented successfully in an organization, it must be compatible and fit the organization at three levels: individual, small group and organization. If the innovation requires a great deal of change in individual attitudes, small group dynamics or organizational structure, then the likelihood of successful implementation is reduced. The first stage in estimating this fit is to evaluate the individual attitudes toward the innovation (the EMR). Human behavior is affected by attitudes, attitudes can be measured and attitudes can be changed with a variety of techniques.[15]

Questions that can be asked about attitudes are :

1. What are the key attitudinal dimensions affecting implementation success?
2. How can these attitudes be measured?
3. How do these attitudes affect implementation success?
4. How can these attitudes be changed to ensure successful implementation?

This study addresses the first two questions using the instrument designed by Schultz and Slevin [17]; the remaining could be addressed in follow up studies.

Traits of the instrument:

This instrument was designed using the following principles:

1. General – easy to adapt to a variety of implementation situations.
2. Easy to understand by the user.
3. Simple to administer.
4. Capable of being quantitatively scored.
5. Able to provide meaningful attitudinal dimensions that could be worked on and be changed.
6. Suitable for pre implementation.

***The Factors*:**

An explanation and definition of each of the seven factors examined by the Schultz and Slevin instrument is as follows:

1. Performance:

Defined as the effect of the information system on the respondent's job performance and performance visibility. There are thirteen questions to evaluate this factor. A sample question is "The information I will receive from the EMR will make my job easier."

2. Interpersonal:

Dealing with interpersonal relations, communication, increased interaction and consultation with others. This scale has five questions. An example is "I will need to consult others more often before making a decision."

3. Changes:

Referring to the changes that will occur in the organizational structure and the people the respondents will deal with. There are four questions to elicit this factor. For example, "The management structure will change."

4. Goals:

After implementation goals will be clearer, more congruent to the employees and more achievable. This has nine questions. An example is "Individuals will set higher targets for performance."

5. Support /Resistance:

The information system (EMR) has implementation support in the way of adequate top management, technical and organizational support and does not have undue resistance. This is made up of eleven questions. An example is "This project is important to top management."

6. Client/Implementer:

Dealing with the relationship between the implementers and the respondents, in that implementers understand the problems of the clients and work well with their clients. This factor has three questions. An example is "When I talk to those implementing the EMR, they respect my opinion."

7. Urgency:

A need for results, even with costs involved, importance to the respondent's boss, the top management and the respondent. This has twelve questions. An example is, "I need the EMR."

The objectives of this study are 1) to adapt the Schultz and Slevin survey instrument to measure attitudes of potential end users toward the implementation of an EMR before the implementation and 2) to carry out a measurement study to establish the reliability and explore the validity of this instrument.

Methods:

The instrument:

The Schultz and Slevin instrument[17] detailed above was modified for evaluating the pre implementation attitudes towards an EMR. The main change was the replacement of the application "FORECAST" in the Shultz and Slevin instrument with "EMR". For

example, the question in the original instrument, "The use of FORECAST will increase profits" *was changed to* "The use of the EMR will improve patient care." Also, a section for demographic information was added. *–(Please see Appendix 1 for a copy of the modified instrument.)*

The modified instrument was inspected and validated by the thesis committee members, who are domain experts. Furthermore the instrument also underwent pre testing by 2 physicians, 3 nurses and 2 medical informatics graduate students, who found the instrument clear and unambiguous.

The final instrument was a pre-implementation self-administered Likert scale instrument with fifty-seven questions that would evaluate the attitudes of individual respondents among clinic staff toward the implementation of an EMR.

The Sample:

This instrument was administered to the staff at six clinics at OHSU. Three of these clinics were the test pilot clinics and the other three clinics were the control clinics. Dr. Ronald Marcum, who chairs the OHSU Logician implementation committee, was the expert who suggested the clinics, based on considerations such as infrastructure, availability of computers and the presence of champions.

The test pilot clinics were:

1. The Gabriel Park family medicine clinic.
2. The Center for Women's Health clinic
3. The Ear Nose and Throat (ENT) clinic

These clinics were selected as the test pilot clinics because they were judged to be the most ready for the EMR, based on the above-mentioned considerations

The control clinics were:

1. The Sellwood clinic
2. The Casey Eye Institute clinic
3. The Department of Urology clinic.

These clinics were the controls because they cooperated with carrying out the study, not because they were judged to be the least ready for the EMR. Those that were judged to be the least ready were approached first about taking part in the study, but were not interested in participating.

The sample size in each clinic varied from between ten to thirty. The clinic staff was divided into three categories. This was done with a view to examine for possible differences in responses between the different job categories –

1. The non-clinical staff, for example the receptionists.
2. The clinical staff that are not providers, for example the medical assistants and nurses.
3. The providers, for example the physicians.

Administration Procedure:

An appropriate number of surveys were hand delivered to the clinic manager, who then distributed the surveys and collected the completed surveys from the respondents.

Method used to analyze the responses:

Using the procedure suggested by Friedman and Wyatt [19] the following steps were carried out in analyzing the results of the survey.

Step 1: Compilation of raw data into a complete object-by observation matrix i.e. the respondents (objects) were listed in rows, while the questions (observations) were listed in columns. *(Please see appendix 3 for an example)*

Step 2: Compilation of each factor's matrix by extracting the respective factor's data from the complete matrix. *(Please see appendix 4 for an example)*

Step 3: Inspection of the distribution (means and standard deviations) of all observations (questions) in a factor, to ensure that they are approximately equal.

Step 4: Inspection of the correlations between the observations (questions) within a factor to ensure they are correlated (correlation coefficient at least 0.25, significance at the most 0.05) and in the proper direction.

Step 5: Calculation of the reliability of each factor using Cronbach's alpha and check if the reliability was greater than 0.7, in which case the factor was considered reliable.

Step 6: If reliable, carry out the ANOVA test for validity using the sum of observations for each respondent for a given factor.

Reliability:

Reliability is defined as the degree to which the measurement is consistent or reproducible and is synonymous with precision. Reliability can be determined by the test-retest method- where an instrument is administered to the same group of subjects multiple times or through internal consistency - where concordance between multiple

items provided once to a group of subjects is examined. The reliability of this instrument was established by calculating the Cronbach's alpha for internal consistency for each of the seven factors. Cronbach's alpha is a method used to calculate the reliability coefficient for internal consistency, which comes as a function in most statistical software packages. The value of alpha ranges from zero (unreliable) to one (perfectly reliable) with a value of 0.7 or greater considered acceptable.

Validity:

Validity is defined as the degree to which the instrument actually measures what the investigator wants to measure. The validity of the instrument was established as follows:

1. *Content Validity-*

   Content validity or face validity, is to some extent established for this instrument by the fact that it has been previously validated in another domain. The modified instrument was inspected and validated by the thesis committee members, who are domain experts. Furthermore, the instrument also underwent pre testing as detailed before.

2. *Criterion Related Validity-*

   Criterion related validity is established if the results of the measurement process correlate with some external standard. The external standard used in this study was the judgment of an independent external judge, Dr. Ronald Marcum and the OHSU committee for the EMR implementation. They had evaluated the clinics most ready for test piloting the EMR and those that were not. This study was

carried out in six different clinics, three of which had been evaluated to be most ready for test piloting the EMR and the other three that were selected as controls- by the above-mentioned external judge. This study did a comparison between these two groups of clinics and compared the results with the evaluation of the external judge (Dr Ronald Marcum et al). In this way criterion related validity was established.

3. *Construct Validity-*

Construct validity is established if the items are associated or correlate with other measures as expected. The fact that this instrument is based on the Shultz and Slevin instrument, which underwent factor analysis, offers evidence that this instrument has some construct validity. However, this study does not specifically address construct validity.

The ANOVA model used to examine significant differences was a mixed model analysis of variance. The model includes fixed and random effects. The fixed effects were Ready/Control and Job title. The random effect was Location (clinic).

The ANOVA factors were:

- Ready /Control
- Location nested within Ready/Control
- Job title
- Interaction of Job title and Location nested within Ready/Control.

The correlation and reliability analysis was done using the SPSS application [20]. The ANOVA analysis was done using Proc Mixed in SAS [21].

Results

Respondents:

A total of 145 surveys were sent out. Eighty- two completed surveys were returned. Four of these were missing demographic information, in particular the job description, hence they had to be discarded. The breakdown of the remaining seventy-eight responses was as follows (*Table 1*):

Table 1 – Table of the respondents from each clinic by job groups

	Ready Clinics						Control Clinics					
	Gabriel Park Clinic		Women's Health Clinic		Ear Nose Throat		Sellwood Clinic		Casey Eye Clinic		Department Of Urology	
	# in clinic	Resp	# in clinic	Resp	# in clinic	Resp	# in clinic	Resp	# in clinic	Resp	# in clinic	Resp
Non-clinical	15	6	18	13	10	6	8	7	4	2	5	3
Clinical	10	5	22	10	6	0	12	3	4	3	3	0
Providers	8	6	15	4	10	1	8	5	4	2	5	2
Total	33	17	55	27	26	7	28	15	12	7	13	5

Legend:
in clinic– The total number of staff of that category who work in that clinic
Resp – The number of staff of that category who responded to the survey.

Of the 78 respondents, 51 (65%) were from the ready clinics and 27 (35%) were from the control clinics. Also of the 78 respondents, 37 (47%) were from the non-clinical group, 21 (27%) were from the clinical group and 20 (26%) from the provider group.

Of the 78 respondents, 9 (12 %) marked "uncertain" for all the 57 questions asked. These surveys could not be included in the analysis. Comments from these respondents who marked "uncertain" for all the questions that indicated why they responded this way:

" I have heard the EMR will help tremendously with my job at the front desk. I have not heard anything about it however, so I have circled "uncertain" for all questions. Is there a way to get more information about the EMR and how it will affect my position?"

"How can we have an opinion on some of these questions if we have never been around this type of system".

These comments indicate that some of the respondents had no idea about an EMR. This raises an important issue about pre-implementation studies.

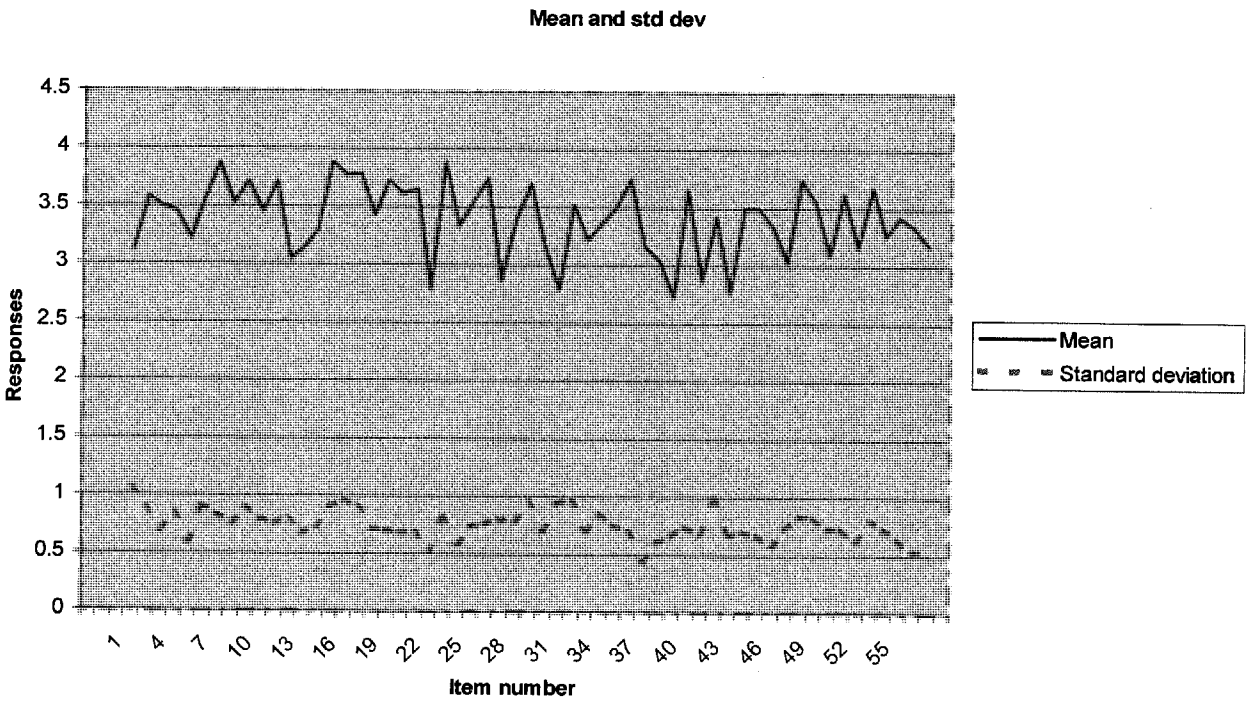
Hence, the final number of usable surveys was 69.

Distribution and Correlations:

Distribution: -

Most of the responses were 3's and 4's. There were very few 1's and a moderate distribution of 2's and 5's. (*Please see appendix 5 for full results*)

Figure 1- Graph of mean and standard deviation of the responses.



As can be seen in the above graph (*Figure 1*), the mean of the responses for each item (question) ranged from 2.72 to 3.88 with a standard deviation variation from 0.44 to 1.05.

Correlations: -

A correlation is considered acceptable if the correlation coefficient between a pair of questions is at least 0.25.The results of correlations for each factor indicated the following (*please see appendix 6 for the full results.*):

For the Performance factor, which has a total of thirteen questions, question 50 does not correlate with the rest of the questions in this group. The other questions correlate well with each other.

The Interpersonal group has five questions. These questions are found to have acceptable correlation between them.

Regarding Changes, there are four questions asking about this factor. These questions have unacceptable correlations among them. The only pair that correlates is questions 12 and 22.

For Goals, which has nine questions, correlations among the questions are acceptable

In Support, of the eleven questions, only questions 35,38 and 55 have acceptable correlations with the other questions.

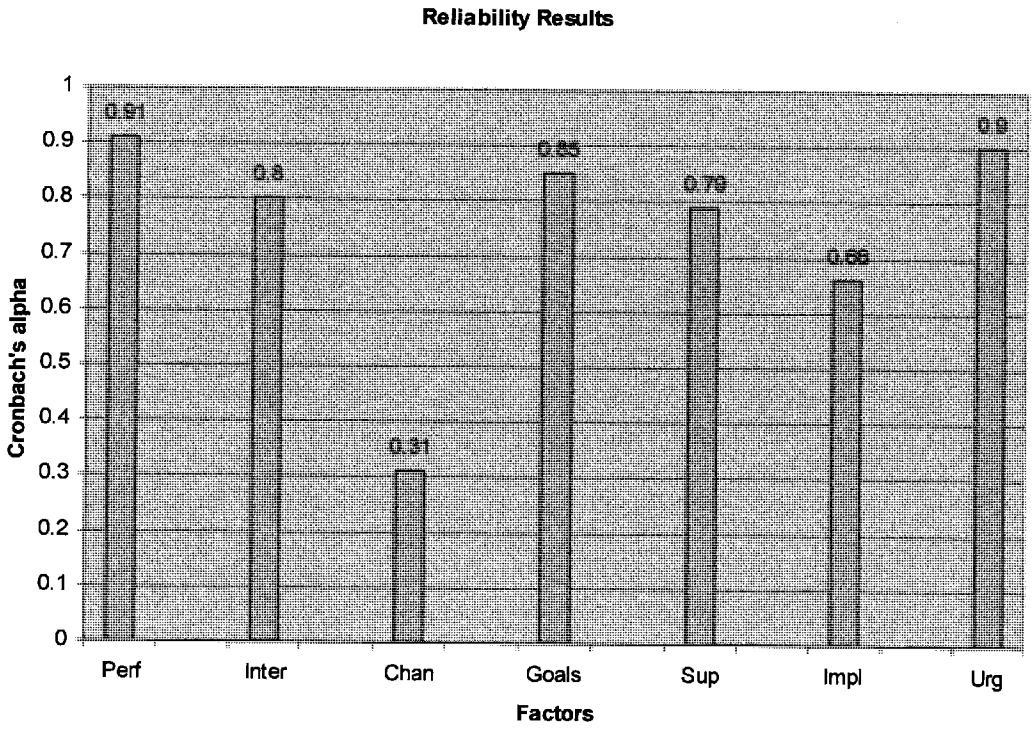
The Client/Implementer group, which has a total of three questions, has satisfactory correlations between them.

For Urgency, of the twelve questions, only questions 6 and 21 do not correlate with the other questions in this group.

Reliability:

The following graph shows the Cronbach's alpha for each of the factors.

Figure 2- Graph showing Cronbach's alpha for each of the factors



Legend:

Perf – Performance Inter- Interpersonal Chan – Changes Goals – Goals.
Sup – Support/Resistance. Impl- Client/Implementer Urg – Urgency

As seen in the graph (*Figure 2*), five of the seven factors have a Cronbach's alpha of greater than 0.7. These five factors are Performance, Interpersonal, Goals, Support/Resistance and Urgency.

Validity:

An ANOVA test was done on each of the five reliable factors. The ANOVA test checked for significant differences between the following

- The test pilot clinics and the control clinics
- Each clinic with the others within the test pilot clinic group and the control clinic group
- Each job subdivision with the other job subdivisions
- Each job subdivision with the other job subdivisions within a clinic

The following table (*Table 2*) summarizes p values for each reliable factor of tests for the mixed model analysis of variance:

Table 2 – table of p values for each reliable factor

Group	Performance	Interpersonal	Goals	Support	Urgency
Ready/Control	0.71	0.41	0.41	0.98	0.34
Job	0.68	0.68	0.44	0.03	0.11
Job* Ready/Control	0.69	0.32	0.72	0.31	0.84

None of the five reliable factors shows any significant difference between the test pilot clinics and the control clinics. Even at the level of the test pilot clinic group and the control clinic group, comparing each clinic with the others in their group, there was no significant difference. There was a significant difference across job categories for support ($p=0.03$). No significant difference was found at the level of the job subdivisions even within each clinic.

Going a step further, the ANOVA test for each question using the SAS program was carried out.

It was found that for question 31 (*Implementing the EMR will be difficult?*), which belongs to the Support factor group of questions, there was a significant interaction of ready/control and job (p= 0.002) as seen in *Table 3*. The least square means for question 31 classified by ready/control and jobs are listed in *Table 4*. Bonferroni adjustment is a method to control for multiple tests, in which you divide the alpha level by the number of tests and use this result as the significance level for each question. After Bonferroni adjustment for multiple comparisons for question 31, there was a significant difference found between the clinical staff and the providers in the ready clinics; the providers felt it was difficult to implement the EMR. There was also a significant difference between the non-clinical staff and the providers in the ready clinics; here again the providers felt it was difficult to implement the EMR. Finally, a significant difference was also found between the providers in the ready clinics and the providers in the control clinics, the providers in the ready clinics felt it was difficult to implement the EMR. It is worth noting that providers in the ready clinic, instead of the control clinics, were the ones who felt it would be difficult to implement the EMR.

In the case of question 1 (*I will need to communicate more with others*?) also, which belongs to the Interpersonal factor group of questions, there was a significant interaction between ready/control and job (p=0.0342). However after Bonferroni adjustment no pair of means was significantly different.

For question 6 (*I will be supported by my boss if I decide not to use the EMR system?*), one of the questions in the Urgency factor group, there was a significant

difference among the job categories (p=0.0096) but not for ready/control nor for the interaction between ready/control and job.

Table 3– table of p values for questions 31,1 and 6.

Group	Question 31	Question 1	Question 6
Ready/Control	0.2469	0.1226	0.3024
Job	0.1762	0.9862	0.0096
Job Ready/Control	0.0022	0.0342	0.4339

Table 4- Table of Least Squares Means for Question 31

Job	Ready/Control	Mean	Standard Err
Clinical	Control	3.019	0.37
Clinical	Ready	2.97	0.29
Non-clinical	Control	2.69	0.30
Non-clinical	Ready	2.95	0.24
Provider	Control	3.22	0.31
Provider	Ready	1.79	0.29

Discussion:

The objective of this thesis was to adapt a survey instrument that could measure attitudes of potential end users toward the implementation of an EMR. A question that arises is who are the potential end users of an EMR? A study of different EMR systems' functionality shows that end users of an EMR vary depending on the particular application. Some EMR systems like *Logician,* which is an ambulatory EMR system by Medicalogic [22] (now part of GE Medical Systems), have functionality such as registration and appointment scheduling built into the EMR application. Hence end users of *Logician* would include non-clinical staff such as receptionists and schedulers. On the other hand, applications such as *EpicCare*, which is an ambulatory EMR by Epic Systems [23], is mainly an application for order entry and charting. Epic has separate applications for registration and scheduling, hence end users of *EpicCare* are mainly clinicians. Another important distinction concerning end users arises between ambulatory and inpatient EMR systems. A study of the functionality of ambulatory EMR systems shows that the provider uses most functions in the ambulatory EMR, as most of the functions are related to order entry and charting. In the inpatient EMR, besides order entry and charting, there are many functions related to nursing and multidisciplinary documentation such as plan of care and flow sheets for intake/output and vitals etc. Hence, there is much more involvement of the nursing staff and the multidisciplinary staff, such as dieticians and physiotherapists, in the inpatient EMR. Also a study of the clinical workflow in teaching hospitals reveals that most order entry and charting in the inpatient EMR are done by residents. Thus depending on the EMR system being implemented, the end users vary.

This study was intended to come up with an instrument that would serve for all EMR's generically and not for any particular proprietary EMR application.

This study has focused on the measurement properties of the Shultz and Slevin instrument, to measure attitudes towards implementation of an EMR. It differs from other previous studies by taking an instrument that was designed to measure attitudes towards implementation of information systems, specifically before the implementation and applying it to measure attitudes toward implementation of the electronic medical record. This study addressed measurement issues, rather than demonstration issues as most previous studies have.

About the instrument and this study in general, the results showed that though five of the seven factors were reliable, the instrument could not bring out significant differences between the ready clinics and control clinics.

The fact that as many as 12 % of the respondents marked uncertain for all the questions in the survey and gave comments that indicated no knowledge of an EMR system, meant that some form of education like handing out a brochure which explained about EMRs and what they do, would probably have brought out a more meaningful response to this study.

Regarding the use of an external judge for comparing results, this study uses only an external judge at the level of the whole institution, namely Dr Ronald Marcum and the

EMR committee for OHSU. Another level of external judges could be used at the level of the individual clinics: this would be the clinic manager, who could be a good judge of those individuals on the clinic staff who would probably be positive toward the implementation of the EMR and those who would not.

It can be argued that the judgment of the external judge regarding the clinics deemed to be ready was based on considerations such as infrastructure and the presence of physician champions. This does not necessarily translate to mean that these clinics would have staff with the most positive attitudes toward the implementation of the EMR. This study was carried out on the assumption that the clinics deemed ready by the external judge were also the ones with clinic staff who had the most positive attitudes toward the implementation of an EMR.

It was interesting to find that the providers from the ready clinics were of the opinion that it would be difficult to implement the EMR. One would feel that these providers are more enthusiastic about the EMR and would be excited about implementing one. The fact is that implementing an EMR is a difficult process and so maybe these providers are realistic and enlightened about it, thus providing credence to the studies by Kraemer & Dutton [7] and Aydin & Rice [8] that illustrated that users who hold realistic expectations about the information system before the implementation use the system better and are more satisfied with it, while those with unrealistic expectations of the system are disillusioned.

In its present form, the instrument does not achieve the desired objective of accurately bringing out attitudes toward the implementation of the EMR. The reasons could be that the study itself had limitations, as will be described, and also that the instrument itself needs improvements, as discussed below.

Limitations of the study

This study was done very early in the process of implementation. Most respondents were still novices with inadequate knowledge about the EMR. If the study was performed after the respondents had some education or training about the EMR, they would have probably been in a better position to answer the questions.

The survey instrument is long, tedious and repetitious and it takes about ten to twelve minutes to complete. This amount of time may not be available to respondents in the medical field. An attempt should be made to reduce the number of questions.

The differences between the test pilot clinics and the control clinics may not have been as much as desired, as those clinics that were judged to be least ready did not participate in this study.

There was no perfect match between the test pilot clinics and the control clinics. There is wide variation in the workflow and practice among different specialties in the medical field. Hence, a good match would be, for example, comparing a ready ENT clinic with a control ENT clinic.

At the time when the study was done, there was no other reliable and valid instrument with which to compare this instrument for proper construct validity. If there is

a reliable and validated instrument, both instruments could have been distributed and the results compared.

The judgment of the external judge about clinics that were deemed ready was based on considerations other than the positive attitudes of the clinic staff toward the implementation of an EMR, which is what this instrument measures.

This study could have been of low power. Power is described as the ability of a study to detect an actual effect or difference. Increasing the sample size adequately may increase the power of the study to a satisfactory level.

There was a lot of variance in the sample such as the different job categories and variation in knowledge about the EMR.

This study only examines the attitudes of the end users towards the EMR. There are other factors that have a role to play in successful implementation such as the budget, physical space and the implementation strategy.

Improvements to the study

About each of the factors and ways in which this questionnaire can be improved:

Performance: Since this factor has a reliability of 0.91, a reduction in the number of questions in this group can be considered in order to shorten the lengthy instrument. There are at present thirteen questions. Using the Spearman Brown [24] prophecy formula, which provides a way to estimate the effect on reliability of adding or deleting items, it was found that eight questions would probably be enough with adequate reliability.

Question 50, which does not correlate with the rest, can be deleted. The other questions to be deleted could be those with the lowest correlation coefficients.

Interpersonal: Though the reliability of this factor was 0.8, there are only five questions in this group. According to Friedman and Wyatt, "Typically, a minimum of eight to ten items is needed to measure a belief or an attitude."[25] Increasing the number of questions for this factor with appropriate questions designed by domain experts may bring out significant differences between the ready and control clinics and so improve validity. It should be noted that there are questionnaires with fewer questions used to measure a factor, an example would be the SF-36 questionnaire, which is used to measure health related quality of life outcomes.

Changes: This is a very important factor. Lorenzi and Riley have quoted many studies in their book Organizational Aspects of Health Informatics: Managing Technological Change to show that change management is an extremely important factor for the successful implementation of a clinical information system. This factor is unsatisfactorily covered in this instrument probably because the number of questions is inadequate. Also, the questions do not correlate well with each other and the reliability is low (0.31). At present, only four questions measure this; using the rule of thumb provided by Friedman and Wyatt as quoted above, there should be at least eight questions. It is imperative that the questionnaire be modified for this factor with the help of domain experts. More questions should be added and the present questions should be modified.

Goals: Though reliability (0.85) was adequate for this factor, there is a need to work on improving the validity for this factor, with bringing out significant differences between the ready and control clinics. Maybe these questions have to be modified to be more specific to the implementation of an EMR. For example, the question " This project is technically sound" should be changed to " The EMR project at OHSU is technically feasible."

Support/Resistance: This is one factor with satisfactory reliability (0.79) and some validity too. Question 31, which is one of the eleven questions from this group, has shown a significant difference between the test pilot clinic providers and the control clinic providers. This question could serve as a model for designing and modifying other questions. The Spearman Brown prophecy formula shows a reduction in the number of questions to eight could be done to shorten the instrument. Those questions with the lowest correlation coefficients could be the ones deleted.

Client/Implementer: Even though there are only three questions in this group, this factor had an almost adequate reliability of 0.66. According to the Friedman and Wyatt rule of thumb for the number of questions [25], there should be more questions added to total at least eight. Also, as can be inferred from the comments of those who marked uncertain for all the questions, the implementation process is still in the early stages and enough interaction between the implementers and end users has probably not yet taken place for most of the respondents to correctly answer these questions. Maybe later in the process of implementation this factor could have good reliability and validity.

Urgency: This factor had a reliability of 0.91. There are at present twelve questions in this group. The Spearman Brown prophecy formula shows a reduction in the number of questions to eight could be done to shorten the instrument. Again those questions with the lowest correlation coefficients could be the ones deleted.

Thus factors Performance, Support and Urgency may have questions reduced, while factors Interpersonal, Changes and Client/Implementer may have questions increased. These suggested improvements to the instrument are based on the assumption that the assignment of ready clinics versus not ready clinics is valid.

Ways to improve the study:

The study could be improved in the following ways:

1. Increasing the sample size may increase the power of the study.
2. Decrease variance by for example giving out some educational material about EMRs and their functions so that variation in knowledge about the EMR is reduced.
3. The control clinics should be the least ready clinics, which will increase effect size.
4. The instrument, as described above, should be modified and made more relevant and specific to the implementation of an EMR.
5. A proven reliable and valid instrument, like the Cork et al instrument [10], should be used as a comparison along with an external judge. This would help bring about construct validity to this study.

Next Steps to continue this study

The next steps would be aimed at improving the reliability and validity of this instrument and would be as follows:

Step 1- Carry out the modifications on the survey instrument as described in the discussion.

Step 2- Do another measurement study with the steps to improve the study as mentioned above, to evaluate the reliability and validity of the modified instrument.

Keep iterating the above two steps until satisfactory reliability and validity of the instrument have been achieved.

Step 3- Use the resulting reliable and valid instrument in demonstration studies to evaluate the attitudes of end users toward the implementation of an EMR.

Step 4- Develop implementation strategies depending on the attitudes of the clinic's staff. Proceed with the implementation only in clinics that have been evaluated as positive in attitude toward the EMR, while making an effort to improve the attitudes of those clinics whose staff are not positive.

Step 5- Carry out post implementation studies to compare the relevance and importance of measuring attitudes before implementation.

Conclusions:

This study has shown that the Shultz and Slevin instrument has merit at least as far as reliability is concerned in being able to evaluate attitudes towards the implementation of an electronic medical record. Furthermore, in this study, there may not have been enough difference in attitudes toward the implementation of an EMR between the test pilot clinics and the control clinics, since those clinics judged to be least ready for the EMR did not participate. Using this study as a baseline, modifications to the instrument should be done to bring about better validity and then further better-designed measurement studies should be carried out with the modified instrument between the ready clinics and the least ready clinics as controls.

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Appendixes

Appendix 1 - The Survey Instrument.

EMR Survey Questionnaire.

Name:
Job Title:
Department:

An Electronic Medical Record (EMR) a.k.a. Computerized Patient Record System - is being considered for implementation at OHSU. This survey is to evaluate your opinion about the Electronic Medical Record (EMR). Each question in this questionnaire is concerned with how you feel about each statement as it applies to the situation after the EMR is operational.

Please read each statement carefully and circle one of the words from the following line that describes most clearly how you feel about the statement

For example:

I find the EMR system better for retrieving patient information.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

Please keep in mind what is important is your opinion

1. I will need to communicate more with others.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

2. My job will be more satisfying.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

3. The results of my efforts will be seen better by others.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

4. Top management will provide the resources to implement the EMR.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

5. The EMR system costs too much

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

6. I will be supported by my boss if I decide not to use the EMR system.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

7. It will be easier for me to perform my job well.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

8. Decisions based on the EMR system will be better.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

9. The results of the EMR system are needed now.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

10. People will accept the required change.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

11. The accuracy of information I receive will be improved by the EMR.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

12. The individuals I work with will change.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

13. The implementers of the EMR don't understand our problems

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

14. I will have more control over my job.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

15. The EMR system is important to me.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

16. I need the EMR system.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

17. It is important that the EMR be used soon.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

18. Individuals will set higher targets for performance.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

19. Top management sees the EMR as being important.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

20. I will be able to improve my performance.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

21. This project is important to my boss.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

22. The management structure will change.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

23. The use of the EMR will improve patient care.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

24. This project is technically sound.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

25. Others will be more aware of what I am doing.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

26. The information I receive from the EMR will make my job easier.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

27. I will need more help from others.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

28. The EMR system will not require any changes in the clinic structure.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

29. I will spend less time looking for information.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

30. The goals of OHSU will become clearer.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

31. Implementing the EMR will be difficult.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

32. The EMR system should be put into use immediately.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

33. I will have to get to know several new people.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

34. Top management does not realize how complex this change is.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

35. People will be given sufficient training to utilize the EMR.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

36. This project is important to top management.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

37. My counterparts in other departments will identify more with OHSU's goals.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

38. There will be adequate staff available to successfully implement the EMR .

a. Strongly disgree b. Disagree c. Uncertain d. Agree e. Strongly agree

39. I will need to consult others more often before making a decision.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

40. The patterns of communication will be simpler.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

41. I will need to talk more with other people.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

42. It is urgent that the EMR system be implemented.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

43. I will need the help of others more often.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

44. I will be able to see the results of my efforts better.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

45. I enjoy working with those who are implementing the EMR.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

46. When I talk to those implementing the EMR, they respect my opinion.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

47. My counterparts in other departments are generally resistant to changes of this type.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

48. The sooner the EMR system is in use the better.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

49. The accuracy of my job performance will improve as a result of using the EMR.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

50. My performance will be monitored more closely.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

51. Benefits of the EMR system will out weigh the costs.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

52. The organization' goals and my goals will be more similar than they are now.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

53. The clinic will perform better.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

54. Personal conflicts will not increase as a result of the EMR.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

55. The implementers of the EMR will provide adequate training to users.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

56. The aims of my counterparts in other departments will be more easily achieved.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

57. My personal goals will be better reconciled with the organization's (OHSU) goals.

a. Strongly disagree b. Disagree c. Uncertain d. Agree e. Strongly agree

Appendix 2 – The Factors with their respective questions.

Factor 1 – **Performance**. (13 questions)

2. My job will be more satisfying.
3. The results of my efforts will be seen better by others.
7. It will be easier for me to perform my job well.
11. The accuracy of information I receive will be improved by the EMR.
14. I will have more control over my job.
20. I will be able to improve my performance.
25. Others will be more aware of what I am doing.
26. The information I receive from the EMR will make my job easier.
29. I will spend less time looking for information.
44. I will be able to see the results of my efforts better.
49. The accuracy of my job performance will improve as a result of using the EMR.
50. My performance will be monitored more closely
53. The clinic will perform better.

Factor 2 – **Interpersonal** (5 questions)

1. I will need to communicate more with others.
27. I will need more help from others.
39. I will need to consult others more often before making a decision.
41. I will need to talk more with other people.
43. I will need the help of others more often.

Factor 3 – **Changes** (4 questions)

12. The individuals I work with will change.
22. The management structure will change.
28. The EMR system will not require any changes in the clinic structure.
33. I will have to get to know several new people.

Factor 4 – **Goals** (9 questions)

18. Individuals will set higher targets for performance.
23. The use of the EMR will improve patient care.
24. This project is technically sound.

30. The goals of OHSU will become clearer.
37. My counterparts in other departments will identify more with OHSU's goals.
40. The patterns of communication will be simpler.
52. The organization' goals and my goals will be more similar than they are now.
56. The aims of my counterparts in other departments will be more easily achieved.
57. My personal goals will be better reconciled with the organization's (OHSU) goals.

Factor 5 – **Support/Resistance** (11 questions)

4. Top management will provide the resources to implement the EMR.
10. People will accept the required change.
19. Top management sees the EMR as being important.
31. Implementing the EMR will be difficult.
34. Top management does not realize how complex this change is.
35. People will be given sufficient training to utilize the EMR.
36. This project is important to top management.
38. There will be adequate staff available to successfully implement the EMR.
47. My counterparts in other departments are generally resistant to changes of this type.
54. Personal conflicts will not increase as a result of the EMR.
55. The implementers of the EMR will provide adequate training to users.

Factor 6 – **Client/Implementer** (3 questions)

13. The implementers of the EMR don't understand our problems
45. I enjoy working with those who are implementing the EMR.
46. When I talk to those implementing the EMR, they respect my opinion.

Factor 7 – **Urgency.** (12 questions)

5. The EMR system costs too much
6. I will be supported by my boss if I decide not to use the EMR system.
8. Decisions based on the EMR system will be better.
9. The results of the EMR system are needed now.
15. The EMR system is important to me.
16. I need the EMR system.
17. It is important that the EMR be used soon.
21. This project is important to my boss.
32. The EMR system should be put into use immediately.
42. It is urgent that the EMR system be implemented.
48. The sooner the EMR system is in use the better.
51. Benefits of the EMR system will out weigh the costs.

Appendix 3 – The full observation by objects matrix example.

Abbreviations N=non clinical C= Clinical P=Provider

GP=Gabriel Park U= Unknown

Rd= Ready Nrd= Not ready

ID	Job title	Location	Ready/Not	1	2	3	4
Gabriel Park							
GP1	N	GP	Rd	2	4	4	5
GP2	N	GP	Rd	3	4	3	4
GP3	N	GP	Rd	3	3	3	3
GP4	N	GP	Rd	5	4	4	3
GP5	N	GP	Rd	3	3	3	3
GP6	N	GP	Rd	3	3	3	4
GP7	C	GP	Rd	3	4	4	3
GP8	C	GP	Rd	4	3	3	4
GP9	C	GP	Rd	3	3	3	3
GP10	C	GP	Rd	3	3	3	5
GP11	C	GP	Rd	4	5	4	4
GP12	P	GP	Rd	3	2	4	3
GP13	P	GP	Rd	4	2	3	2
GP14	P	GP	Rd	4	4	3	2
GP15	P	GP	Rd	2	3	4	3
GP16	P	GP	Rd	2	4	4	3
GP17	P	GP	Rd	5	4	4	4
GP18	U	GP	Rd	4	3	4	4

Appendix 4 - A Factor Matrix example

				Factor 1:		Performance			
ID	**Job title**	**Location**	**Ready/Not**	**2**	**3**	**7**	**11**	**14**	**20**
Gabriel Park									
GP1	N	GP	Rd	4	4	5	5	4	4
GP2	N	GP	Rd	4	3	4	4	2	3
GP3	N	GP	Rd	3	3	3	3	3	3
GP4	N	GP	Rd	4	4	4	4	3	4
GP5	N	GP	Rd	3	3	3	3	3	3
GP6	N	GP	Rd	3	3	3	3	3	3
GP7	C	GP	Rd	4	4	4	4	3	4
GP8	C	GP	Rd	3	3	4	4	3	3
GP9	C	GP	Rd	3	3	3	3	3	3
GP10	C	GP	Rd	3	3	3	3	3	3
GP11	C	GP	Rd	5	4	5	4	4	4
GP12	P	GP	Rd	2	4	3	3	2	4
GP13	P	GP	Rd	2	3	2	3	2	3
GP14	P	GP	Rd	4	3	4	4	3	4
GP15	P	GP	Rd	3	4	4	4	4	3
GP16	P	GP	Rd	4	4	4	4	3	4
GP17	P	GP	Rd	4	4	4	4	4	3

Appendix 5- Table of percentage of responses for each item

Item	1	2	3	4	5	6	7	8	9	10
% of 1's	5.797101	1.449275	0	1.449275	0	2.898551	1.449275	1.449275	1.449275	0
% of 2's	21.73913	7.246377	4.347826	7.246377	4.347826	4.347826	2.898551	1.449275	5.797101	13.04348
% of 3's	37.68116	37.68116	49.27536	47.82609	73.91304	42.02899	24.63768	50.72464	33.33333	34.78261
% of 4's	24.63768	39.13043	39.13043	31.88406	17.3913	34.78261	49.27536	36.23188	39.13043	46.37681
% of 5's	10.14493	14.49275	7.246377	11.5942	4.347826	15.94203	21.73913	10.14493	20.28986	5.797101
Mean	3.115942	3.57971	3.492754	3.449275	3.217391	3.565217	3.869565	3.521739	3.710145	3.449275
Standard deviation	1.050717	0.881272	0.699226	0.849502	0.590851	0.915203	0.838645	0.759425	0.909128	0.795876

Item	11	12	13	14	15	16	17	18	19	20
% of 1's	0	1.449275	2.898551	0	1.449275	4.347826	0	0	0	0
% of 2's	5.797101	23.18841	5.797101	11.5942	4.347826	1.449275	7.246377	5.797101	1.449275	2.898551
% of 3's	28.98551	46.37681	66.66667	52.17391	24.63768	30.43478	31.88406	53.62319	37.68116	42.02899
% of 4's	53.62319	27.53623	23.18841	31.88406	43.47826	40.57971	36.23188	33.33333	47.82609	46.37681
% of 5's	11.5942	1.449275	1.449275	4.347826	26.08696	23.18841	24.63768	7.246377	13.04348	8.695652
Mean	3.710145	3.043478	3.144928	3.289855	3.884058	3.768116	3.782609	3.42029	3.724638	3.608696
Standard deviation	0.749538	0.793999	0.67028	0.729654	0.899938	0.972337	0.905369	0.715496	0.704691	0.690639

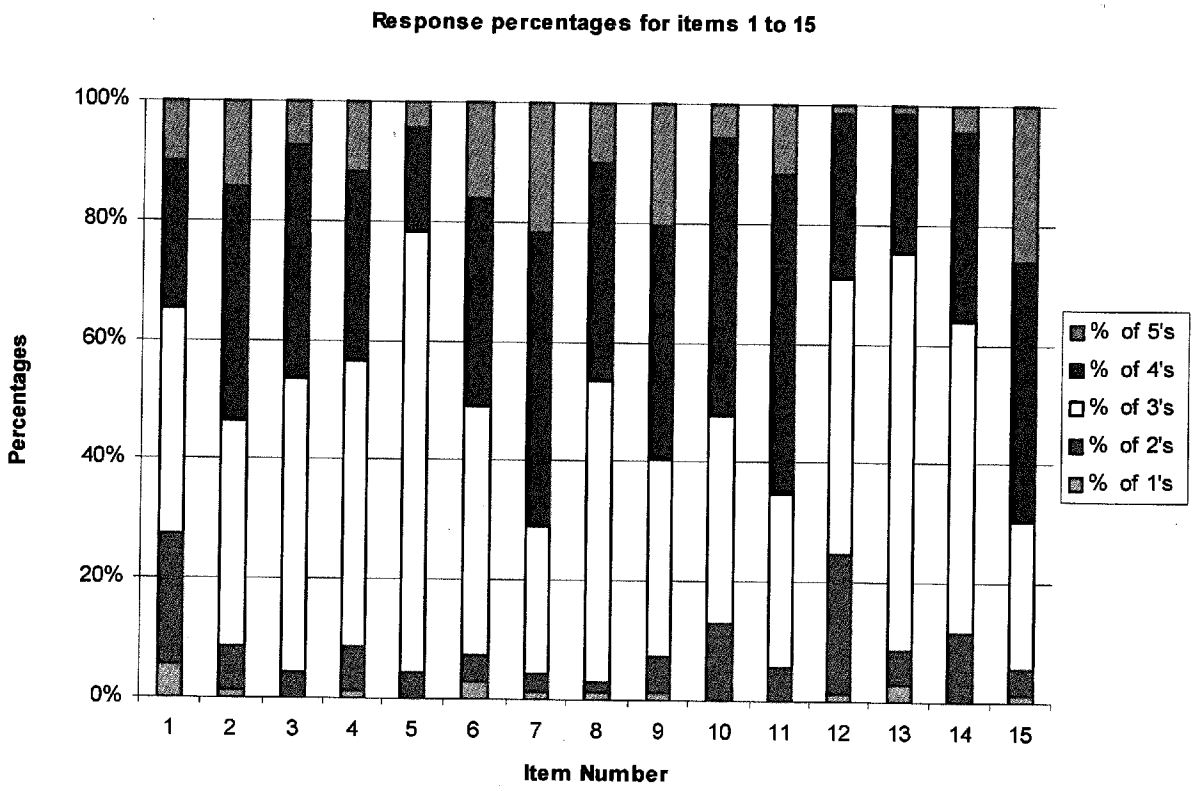
Item	21	22	23	24	25	26	27	28	29	30
% of 1's	0	0	1.449275	0	0	1.449275	0	1.449275	4.347826	0
% of 2's	0	26.08696	1.449275	1.449275	2.898551	1.449275	36.23188	8.695652	4.347826	11.5942
% of 3's	46.37681	69.56522	26.08696	68.11594	50.72464	31.88406	43.47826	44.92754	26.08696	65.21739
% of 4's	42.02899	4.347826	49.27536	26.08696	34.78261	52.17391	17.3913	39.13043	47.82609	17.3913
% of 5's	11.5942	0	21.73913	4.347826	11.5942	13.04348	2.898551	5.797101	17.3913	5.797101
Mean	3.652174	2.782609	3.884058	3.333333	3.550725	3.73913	2.869565	3.391304	3.695652	3.173913
Standard deviation	0.682256	0.510754	0.814144	0.585779	0.738365	0.760266	0.802808	0.789963	0.95954	0.706202

Item	31	32	33	34	35	36	37	38	39	40
% of 1's	8.695652	1.449275	1.449275	2.898551	1.449275	0	0	2.898551	1.449275	0
% of 2's	27.53623	14.49275	10.14493	8.695652	2.898551	0	1.449275	7.246377	34.78261	5.797101
% of 3's	43.47826	30.43478	55.07246	44.92754	49.27536	40.57971	82.6087	72.46377	53.62319	33.33333
% of 4's	17.3913	37.68116	31.88406	36.23188	37.68116	44.92754	14.49275	17.3913	10.14493	50.72464
% of 5's	2.898551	15.94203	1.449275	7.246377	8.695652	14.49275	1.449275	0	0	10.14493
Mean	2.782609	3.521739	3.217391	3.362319	3.492754	3.73913	3.15942	3.043478	2.724638	3.652174
Sdandard deviation	0.937292	0.979326	0.704389	0.856996	0.759706	0.699836	0.441361	0.604755	0.661639	0.744116

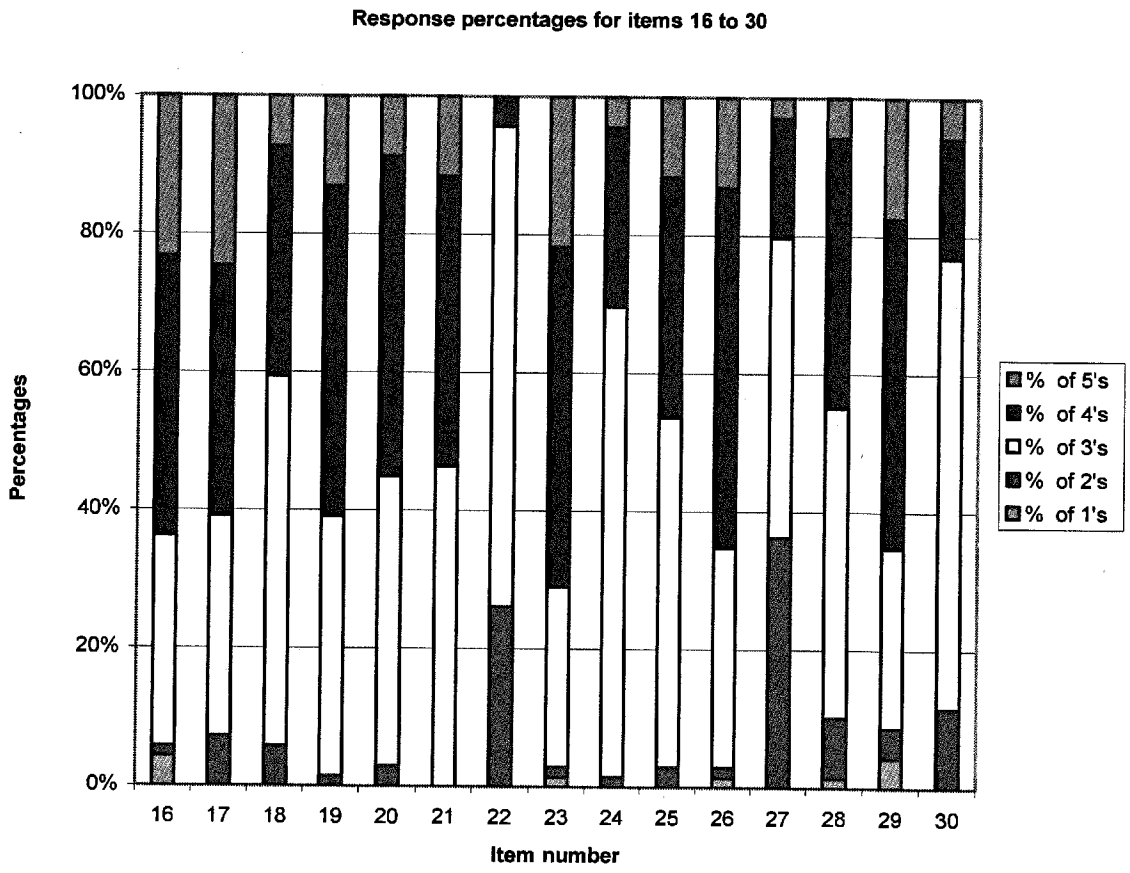
Item	41	42	43	44	45	46	47	48	49	50
% of 1's	2.898551	1.449275	2.898551	0	0	0	0	0	0	1.449275
% of 2's	21.73913	15.94203	27.53623	4.347826	1.449275	1.449275	21.73913	5.797101	8.695652	14.49275
% of 3's	60.86957	37.68116	59.42029	49.27536	56.52174	68.11594	56.52174	33.33333	40.57971	60.86957
% of 4's	14.49275	28.98551	10.14493	39.13043	33.33333	26.08696	18.84058	42.02899	37.68116	20.28986
% of 5's	0	15.94203	0	7.246377	8.695652	4.347826	2.898551	18.84058	13.04348	2.898551
Mean	2.869565	3.420029	2.768116	3.492754	3.492754	3.333333	3.028986	3.73913	3.550725	3.086957
Sdandard deviation	0.684128	0.991223	0.667412	0.699226	0.677868	0.585779	0.727021	0.834058	0.832011	0.722315

Item	51	52	53	54	55	56	57
% of 1's	0	0	1.449275	1.449275	0	0	0
% of 2's	1.449275	10.14493	2.898551	7.246377	2.898551	1.449275	5.797101
% of 3's	47.82609	66.66667	36.23188	60.86957	57.97101	65.21739	72.46377
% of 4's	37.68116	20.28986	44.92754	24.63768	33.33333	31.88406	20.28986
% of 5's	13.04348	2.898551	14.49275	5.797101	5.797101	1.449275	1.449275
Mean	3.623188	3.15942	3.681159	3.26087	3.420029	3.333333	3.173913
Sdandard deviation	0.729654	0.632994	0.813358	0.740671	0.650922	0.533211	0.541146

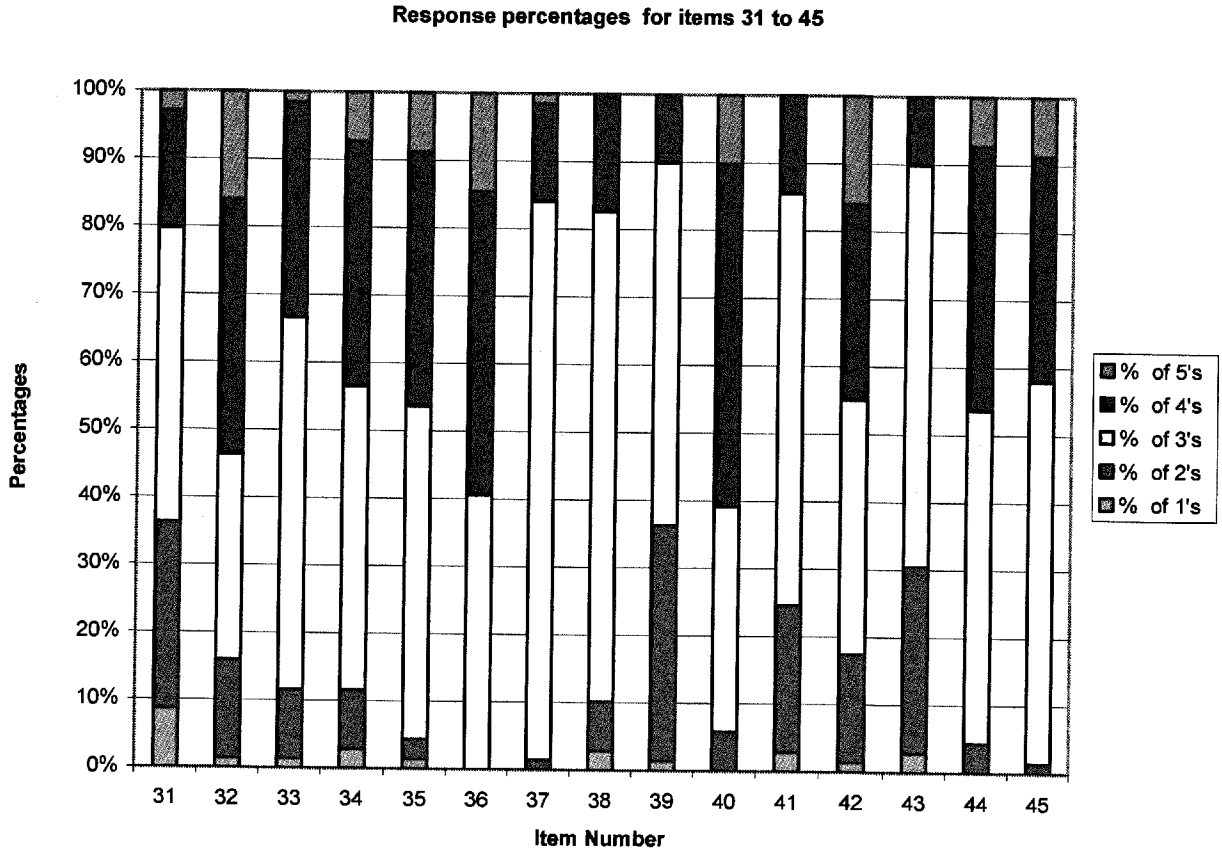
Appendix 5– Graph of response percentages for items 1 to 15



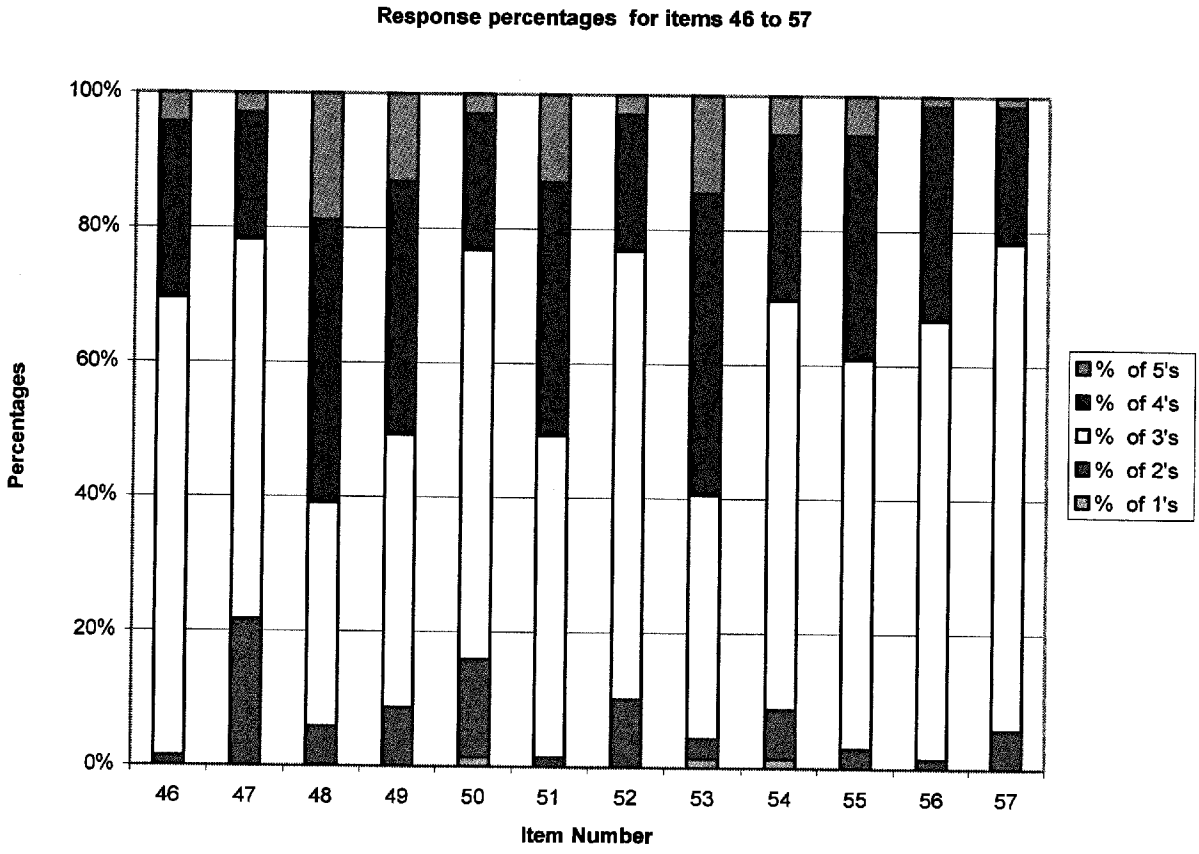
Appendix 5– Graph of response percentages for items 16 to 30



Appendix 5 – Graph of response percentages for items 31 to 45



Appendix 5 – Graph of response percentages for items 46 to 57



Appendix 6 - Tables of Correlations

Perfomance

Correlations

			Q2	Q3	Q7	Q11	Q14	Q20	Q25	Q26
Spearman's rho	Q2	Correlation Coefficient	1.000	.603**	.703**	.520**	.589**	.536**	.325**	.506**
		Sig. (2-tailed)	.	.000	.000	.000	.000	.000	.006	.000
		N	69	69	69	69	69	69	69	69
	Q3	Correlation Coefficient	.603**	1.000	.482**	.473**	.433**	.531**	.421**	.496**
		Sig. (2-tailed)	.000	.	.000	.000	.000	.000	.000	.000
		N	69	69	69	69	69	69	69	69
	Q7	Correlation Coefficient	.703**	.482**	1.000	.654**	.545**	.615**	.329**	.722**
		Sig. (2-tailed)	.000	.000	.	.000	.000	.000	.006	.000
		N	69	69	69	69	69	69	69	69
	Q11	Correlation Coefficient	.520**	.473**	.654**	1.000	.505**	.619**	.453**	.620**
		Sig. (2-tailed)	.000	.000	.000	.	.000	.000	.000	.000
		N	69	69	69	69	69	69	69	69
	Q14	Correlation Coefficient	.589**	.433**	.545**	.505**	1.000	.607**	.540**	.494**
		Sig. (2-tailed)	.000	.000	.000	.000	.	.000	.000	.000
		N	69	69	69	69	69	69	69	69
	Q20	Correlation Coefficient	.536**	.531**	.615**	.619**	.607**	1.000	.547**	.655**
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.	.000	.000
		N	69	69	69	69	69	69	69	69
	Q25	Correlation Coefficient	.325**	.421**	.329**	.453**	.540**	.547**	1.000	.390**
		Sig. (2-tailed)	.006	.000	.006	.000	.000	.000	.	.001
		N	69	69	69	69	69	69	69	69
	Q26	Correlation Coefficient	.506**	.496**	.722**	.620**	.494**	.655**	.390**	1.000
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.001	.
		N	69	69	69	69	69	69	69	69
	Q29	Correlation Coefficient	.322**	.224	.590**	.459**	.444**	.470**	.352**	.570**
		Sig. (2-tailed)	.007	.064	.000	.000	.000	.000	.003	.000
		N	69	69	69	69	69	69	69	69
	Q44	Correlation Coefficient	.612**	.487**	.614**	.668**	.791**	.756**	.579**	.546**
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
		N	69	69	69	69	69	69	69	69
	Q49	Correlation Coefficient	.536**	.462**	.745**	.531**	.554**	.746**	.433**	.707**
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
		N	69	69	69	69	69	69	69	69

Appendix 6 - Tables of Correlations

Perfomance

Correlations

			Q2	Q3	Q7	Q11	Q14	Q20	Q25	Q26
Spearman's rho	Q50	Correlation Coefficient	-.067	-.060	-.208	.129	-.028	-.091	.128	-.029
		Sig. (2-tailed)	.582	.624	.087	.289	.818	.455	.295	.815
		N	69	69	69	69	69	69	69	69
	Q53	Correlation Coefficient	.581**	.386**	.681**	.651**	.711**	.701**	.414**	.643**
		Sig. (2-tailed)	.000	.001	.000	.000	.000	.000	.000	.000
		N	69	69	69	69	69	69	69	69

Appendix 6 - Tables of Correlations

Perfomance

Correlations

			Q29	Q44	Q49	Q50	Q53
Spearman's rho	Q2	Correlation Coefficient	.322**	.612**	.536**	-.067	.581**
		Sig. (2-tailed)	.007	.000	.000	.582	.000
		N	69	69	69	69	69
	Q3	Correlation Coefficient	.224	.487**	.462**	-.060	.386**
		Sig. (2-tailed)	.064	.000	.000	.624	.001
		N	69	69	69	69	69
	Q7	Correlation Coefficient	.590**	.614**	.745**	-.208	.681**
		Sig. (2-tailed)	.000	.000	.000	.087	.000
		N	69	69	69	69	69
	Q11	Correlation Coefficient	.459**	.668**	.531**	.129	.651**
		Sig. (2-tailed)	.000	.000	.000	.289	.000
		N	69	69	69	69	69
	Q14	Correlation Coefficient	.444**	.791**	.554**	-.028	.711**
		Sig. (2-tailed)	.000	.000	.000	.818	.000
		N	69	69	69	69	69
	Q20	Correlation Coefficient	.470**	.756**	.746**	-.091	.701**
		Sig. (2-tailed)	.000	.000	.000	.455	.000
		N	69	69	69	69	69
	Q25	Correlation Coefficient	.352**	.579**	.433**	.128	.414**
		Sig. (2-tailed)	.003	.000	.000	.295	.000
		N	69	69	69	69	69
	Q26	Correlation Coefficient	.570**	.546**	.707**	-.029	.643**
		Sig. (2-tailed)	.000	.000	.000	.815	.000
		N	69	69	69	69	69
	Q29	Correlation Coefficient	1.000	.420**	.578**	-.126	.558**
		Sig. (2-tailed)	.	.000	.000	.302	.000
		N	69	69	69	69	69
	Q44	Correlation Coefficient	.420**	1.000	.593**	.066	.741**
		Sig. (2-tailed)	.000	.	.000	.590	.000
		N	69	69	69	69	69
	Q49	Correlation Coefficient	.578**	.593**	1.000	-.174	.629**
		Sig. (2-tailed)	.000	.000	.	.154	.000
		N	69	69	69	69	69

Appendix 6 - Tables of Correlations

Perfomance

Correlations

			Q29	Q44	Q49	Q50	Q53
Spearman's rho	Q50	Correlation Coefficient	-.126	.066	-.174	1.000	-.096
		Sig. (2-tailed)	.302	.590	.154	.	.430
		N	69	69	69	69	69
	Q53	Correlation Coefficient	.558**	.741**	.629**	-.096	1.000
		Sig. (2-tailed)	.000	.000	.000	.430	.
		N	69	69	69	69	69

**. Correlation is significant at the 0.01 level (2-tailed).

Interpersonal

Correlations

			Q1	Q27	Q39	Q41	Q43
Spearman's rho	Q1	Correlation Coefficient	1.000	.293*	.379**	.466**	.425**
		Sig. (2-tailed)	.	.015	.001	.000	.000
		N	69	69	69	69	69
	Q27	Correlation Coefficient	.293*	1.000	.456**	.378**	.548**
		Sig. (2-tailed)	.015	.	.000	.001	.000
		N	69	69	69	69	69
	Q39	Correlation Coefficient	.379**	.456**	1.000	.613**	.691**
		Sig. (2-tailed)	.001	.000	.	.000	.000
		N	69	69	69	69	69
	Q41	Correlation Coefficient	.466**	.378**	.613**	1.000	.683**
		Sig. (2-tailed)	.000	.001	.000	.	.000
		N	69	69	69	69	69
	Q43	Correlation Coefficient	.425**	.548**	.691**	.683**	1.000
		Sig. (2-tailed)	.000	.000	.000	.000	.
		N	69	69	69	69	69

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Changes

Correlations

			Q12	Q22	Q28	Q33
Spearman's rho	Q12	Correlation Coefficient	1.000	.362**	-.010	.133
		Sig. (2-tailed)	.	.002	.932	.277
		N	69	69	69	69
	Q22	Correlation Coefficient	.362**	1.000	-.075	.074
		Sig. (2-tailed)	.002	.	.541	.547
		N	69	69	69	69
	Q28	Correlation Coefficient	-.010	-.075	1.000	.037
		Sig. (2-tailed)	.932	.541	.	.761
		N	69	69	69	69
	Q33	Correlation Coefficient	.133	.074	.037	1.000
		Sig. (2-tailed)	.277	.547	.761	.
		N	69	69	69	69

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			Q18	Q23	Q24	Q30	Q37	Q40	Q52
Spearman's rho	Q18	Correlation Coefficient	1.000	.358**	.218	.451**	.428**	.265*	.366**
		Sig. (2-tailed)	.	.003	.072	.000	.000	.028	.002
		N	69	69	69	69	69	69	69
	Q23	Correlation Coefficient	.358**	1.000	.419**	.272*	.251*	.670**	.184
		Sig. (2-tailed)	.003	.	.000	.024	.037	.000	.130
		N	69	69	69	69	69	69	69
	Q24	Correlation Coefficient	.218	.419**	1.000	.357**	.234	.322**	.357**
		Sig. (2-tailed)	.072	.000	.	.003	.053	.007	.003
		N	69	69	69	69	69	69	69
	Q30	Correlation Coefficient	.451**	.272*	.357**	1.000	.486**	.259*	.482**
		Sig. (2-tailed)	.000	.024	.003	.	.000	.032	.000
		N	69	69	69	69	69	69	69
	Q37	Correlation Coefficient	.428**	.251*	.234	.486**	1.000	.270*	.466**
		Sig. (2-tailed)	.000	.037	.053	.000	.	.025	.000
		N	69	69	69	69	69	69	69
	Q40	Correlation Coefficient	.265*	.670**	.322**	.259*	.270*	1.000	.310**
		Sig. (2-tailed)	.028	.000	.007	.032	.025	.	.010
		N	69	69	69	69	69	69	69
	Q52	Correlation Coefficient	.366**	.184	.357**	.482**	.466**	.310**	1.000
		Sig. (2-tailed)	.002	.130	.003	.000	.000	.010	.
		N	69	69	69	69	69	69	69
	Q56	Correlation Coefficient	.481**	.465**	.314**	.355**	.412**	.533**	.467**
		Sig. (2-tailed)	.000	.000	.009	.003	.000	.000	.000
		N	69	69	69	69	69	69	69
	Q57	Correlation Coefficient	.346**	.325**	.338**	.560**	.563**	.376**	.459**
		Sig. (2-tailed)	.004	.007	.005	.000	.000	.001	.000
		N	69	69	69	69	69	69	69

Correlations

			Q56	Q57
Spearman's rho	Q18	Correlation Coefficient	.481**	.346**
		Sig. (2-tailed)	.000	.004
		N	69	69
	Q23	Correlation Coefficient	.465**	.325**
		Sig. (2-tailed)	.000	.007
		N	69	69
	Q24	Correlation Coefficient	.314**	.338**
		Sig. (2-tailed)	.009	.005
		N	69	69
	Q30	Correlation Coefficient	.355**	.560**
		Sig. (2-tailed)	.003	.000
		N	69	69
	Q37	Correlation Coefficient	.412**	.563**
		Sig. (2-tailed)	.000	.000
		N	69	69
	Q40	Correlation Coefficient	.533**	.376**
		Sig. (2-tailed)	.000	.001
		N	69	69
	Q52	Correlation Coefficient	.467**	.459**
		Sig. (2-tailed)	.000	.000
		N	69	69
	Q56	Correlation Coefficient	1.000	.589**
		Sig. (2-tailed)	.	.000
		N	69	69
	Q57	Correlation Coefficient	.589**	1.000
		Sig. (2-tailed)	.000	.
		N	69	69

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

			Q4	Q10	Q19	Q31	Q34	Q35	Q36	Q38
Spearman's rho	Q4	Correlation Coefficient	1.000	.344**	.168	.257*	.197	.610**	.202	.547**
		Sig. (2-tailed)	.	.004	.168	.033	.104	.000	.095	.000
		N	69	69	69	69	69	69	69	69
	Q10	Correlation Coefficient	.344**	1.000	.048	.181	.162	.398**	-.009	.265*
		Sig. (2-tailed)	.004	.	.694	.137	.184	.001	.938	.028
		N	69	69	69	69	69	69	69	69
	Q19	Correlation Coefficient	.168	.048	1.000	-.136	.136	.328**	.835**	.295*
		Sig. (2-tailed)	.168	.694	.	.267	.264	.006	.000	.014
		N	69	69	69	69	69	69	69	69
	Q31	Correlation Coefficient	.257*	.181	-.136	1.000	.275*	.317**	-.100	.202
		Sig. (2-tailed)	.033	.137	.267	.	.022	.008	.411	.097
		N	69	69	69	69	69	69	69	69
	Q34	Correlation Coefficient	.197	.162	.136	.275*	1.000	.317**	.211	.236
		Sig. (2-tailed)	.104	.184	.264	.022	.	.008	.081	.051
		N	69	69	69	69	69	69	69	69
	Q35	Correlation Coefficient	.610**	.398**	.328**	.317**	.317**	1.000	.404**	.580**
		Sig. (2-tailed)	.000	.001	.006	.008	.008	.	.001	.000
		N	69	69	69	69	69	69	69	69
	Q36	Correlation Coefficient	.202	-.009	.835**	-.100	.211	.404**	1.000	.304*
		Sig. (2-tailed)	.095	.938	.000	.411	.081	.001	.	.011
		N	69	69	69	69	69	69	69	69
	Q38	Correlation Coefficient	.547**	.265*	.295*	.202	.236	.580**	.304*	1.000
		Sig. (2-tailed)	.000	.028	.014	.097	.051	.000	.011	.
		N	69	69	69	69	69	69	69	69
	Q47	Correlation Coefficient	.106	.165	.126	.107	.461**	.137	.190	.085
		Sig. (2-tailed)	.386	.176	.303	.382	.000	.260	.119	.486
		N	69	69	69	69	69	69	69	69
	Q54	Correlation Coefficient	.148	.283*	-.028	.365**	.299*	.144	-.028	.213
		Sig. (2-tailed)	.225	.019	.821	.002	.013	.237	.816	.079
		N	69	69	69	69	69	69	69	69
	Q55	Correlation Coefficient	.593**	.163	.363**	.190	.308*	.670**	.556**	.607**
		Sig. (2-tailed)	.000	.182	.002	.117	.010	.000	.000	.000
		N	69	69	69	69	69	69	69	69

Correlations

			Q47	Q54	Q55
Spearman's rho	Q4	Correlation Coefficient	.106	.148	.593**
		Sig. (2-tailed)	.386	.225	.000
		N	69	69	69
	Q10	Correlation Coefficient	.165	.283*	.163
		Sig. (2-tailed)	.176	.019	.182
		N	69	69	69
	Q19	Correlation Coefficient	.126	-.028	.363**
		Sig. (2-tailed)	.303	.821	.002
		N	69	69	69
	Q31	Correlation Coefficient	.107	.365**	.190
		Sig. (2-tailed)	.382	.002	.117
		N	69	69	69
	Q34	Correlation Coefficient	.461**	.299*	.308*
		Sig. (2-tailed)	.000	.013	.010
		N	69	69	69
	Q35	Correlation Coefficient	.137	.144	.670**
		Sig. (2-tailed)	.260	.237	.000
		N	69	69	69
	Q36	Correlation Coefficient	.190	-.028	.556**
		Sig. (2-tailed)	.119	.816	.000
		N	69	69	69
	Q38	Correlation Coefficient	.085	.213	.607**
		Sig. (2-tailed)	.486	.079	.000
		N	69	69	69
	Q47	Correlation Coefficient	1.000	.283*	.236
		Sig. (2-tailed)	.	.018	.051
		N	69	69	69
	Q54	Correlation Coefficient	.283*	1.000	.247*
		Sig. (2-tailed)	.018	.	.041
		N	69	69	69
	Q55	Correlation Coefficient	.236	.247*	1.000
		Sig. (2-tailed)	.051	.041	.
		N	69	69	69

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

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Correlations

			Q13	Q45	Q46
Spearman's rho	Q13	Correlation Coefficient	1.000	.377**	.439**
		Sig. (2-tailed)	.	.001	.000
		N	69	69	69
	Q45	Correlation Coefficient	.377**	1.000	.495**
		Sig. (2-tailed)	.001	.	.000
		N	69	69	69
	Q46	Correlation Coefficient	.439**	.495**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	69	69	69

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			Q5	Q6	Q8	Q9	Q15	Q16	Q17	Q21
Spearman's rho	Q5	Correlation Coefficient	1.000	.131	.356**	.374**	.524**	.553**	.574**	-.027
		Sig. (2-tailed)	.	.284	.003	.002	.000	.000	.000	.828
		N	69	69	69	69	69	69	69	69
	Q6	Correlation Coefficient	.131	1.000	.003	.083	.306*	.235	.242*	.302*
		Sig. (2-tailed)	.284	.	.980	.496	.011	.052	.045	.012
		N	69	69	69	69	69	69	69	69
	Q8	Correlation Coefficient	.356**	.003	1.000	.588**	.579**	.620**	.479**	.143
		Sig. (2-tailed)	.003	.980	.	.000	.000	.000	.000	.240
		N	69	69	69	69	69	69	69	69
	Q9	Correlation Coefficient	.374**	.083	.588**	1.000	.676**	.697**	.706**	.009
		Sig. (2-tailed)	.002	.496	.000	.	.000	.000	.000	.938
		N	69	69	69	69	69	69	69	69
	Q15	Correlation Coefficient	.524**	.306*	.579**	.676**	1.000	.885**	.761**	.123
		Sig. (2-tailed)	.000	.011	.000	.000	.	.000	.000	.312
		N	69	69	69	69	69	69	69	69
	Q16	Correlation Coefficient	.553**	.235	.620**	.697**	.885**	1.000	.758**	.006
		Sig. (2-tailed)	.000	.052	.000	.000	.000	.	.000	.961
		N	69	69	69	69	69	69	69	69
	Q17	Correlation Coefficient	.574**	.242*	.479**	.706**	.761**	.758**	1.000	.037
		Sig. (2-tailed)	.000	.045	.000	.000	.000	.000	.	.764
		N	69	69	69	69	69	69	69	69
	Q21	Correlation Coefficient	-.027	.302*	.143	.009	.123	.006	.037	1.000
		Sig. (2-tailed)	.828	.012	.240	.938	.312	.961	.764	.
		N	69	69	69	69	69	69	69	69
	Q32	Correlation Coefficient	.490**	-.014	.459**	.487**	.601**	.655**	.756**	-.262*
		Sig. (2-tailed)	.000	.912	.000	.000	.000	.000	.000	.030
		N	69	69	69	69	69	69	69	69
	Q42	Correlation Coefficient	.632**	.049	.441**	.487**	.607**	.643**	.752**	-.077
		Sig. (2-tailed)	.000	.691	.000	.000	.000	.000	.000	.527
		N	69	69	69	69	69	69	69	69
	Q48	Correlation Coefficient	.595**	.188	.391**	.619**	.637**	.661**	.871**	.017
		Sig. (2-tailed)	.000	.123	.001	.000	.000	.000	.000	.890
		N	69	69	69	69	69	69	69	69
	Q51	Correlation Coefficient	.560**	.140	.471**	.553**	.608**	.642**	.729**	-.048
		Sig. (2-tailed)	.000	.250	.000	.000	.000	.000	.000	.696
		N	69	69	69	69	69	69	69	69

Urgency

Correlations

			Q32	Q42	Q48	Q51
Spearman's rho	Q5	Correlation Coefficient	.490**	.632**	.595**	.560**
		Sig. (2-tailed)	.000	.000	.000	.000
		N	69	69	69	69
	Q6	Correlation Coefficient	-.014	.049	.188	.140
		Sig. (2-tailed)	.912	.691	.123	.250
		N	69	69	69	69
	Q8	Correlation Coefficient	.459**	.441**	.391**	.471**
		Sig. (2-tailed)	.000	.000	.001	.000
		N	69	69	69	69
	Q9	Correlation Coefficient	.487**	.487**	.619**	.553**
		Sig. (2-tailed)	.000	.000	.000	.000
		N	69	69	69	69
	Q15	Correlation Coefficient	.601**	.607**	.637**	.608**
		Sig. (2-tailed)	.000	.000	.000	.000
		N	69	69	69	69
	Q16	Correlation Coefficient	.655**	.643**	.661**	.642**
		Sig. (2-tailed)	.000	.000	.000	.000
		N	69	69	69	69
	Q17	Correlation Coefficient	.756**	.752**	.871**	.729**
		Sig. (2-tailed)	.000	.000	.000	.000
		N	69	69	69	69
	Q21	Correlation Coefficient	-.262*	-.077	.017	-.048
		Sig. (2-tailed)	.030	.527	.890	.696
		N	69	69	69	69
	Q32	Correlation Coefficient	1.000	.664**	.684**	.660**
		Sig. (2-tailed)	.	.000	.000	.000
		N	69	69	69	69
	Q42	Correlation Coefficient	.664**	1.000	.746**	.632**
		Sig. (2-tailed)	.000	.	.000	.000
		N	69	69	69	69
	Q48	Correlation Coefficient	.684**	.746**	1.000	.694**
		Sig. (2-tailed)	.000	.000	.	.000
		N	69	69	69	69
	Q51	Correlation Coefficient	.660**	.632**	.694**	1.000
		Sig. (2-tailed)	.000	.000	.000	.
		N	69	69	69	69

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).