Evaluation of Clinicians' Satisfaction of a Discharge Summary System (DSS) in a Taiwanese Teaching Hospital – The Reliability of an Evaluating Instrument

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Introduction

- **Hospital Information System (HIS)**
  - An HIS integrates lots of sub-systems, and has the potential to improve patient care, cost containment and improve the efficiency of work practice [1].
- **Electronic Medical Records (EMRs) System**
  - An EMR contains sensitive health data of individual patients.
  - Adoption of EMR could lead to better quality and more efficient healthcare.
- **The purpose of the study**
  - To establish a suitable evaluation instrument which includes dimensions and attributes for the "EMRs evaluation" based on "Patient Safety" in Taiwan.

Background of sample hospital

- **This research was performed in a teaching hospital in the south of Taiwan.**
  - 19 clinical branches and 498 general beds

- **It has been using a Discharge Summary System (DSS) to improve the quality of patient care for more than two years.**
  - In order to protect the privacy of patient records, only limited members are permitted to use this DSS.
    - Attending physicians,
    - Residents,
    - Interns,
    - Nursing specialist practitioners (NSP)

Methods

- **Research Design**
  - The research uses "cross-sectional" design to achieve its goal.
  - It adopted "goal-based evaluation" [2] in designing an appropriate evaluation tool.

- **Participants**
  - Forty-six physicians were invited to join this evaluation study.

- **Evaluation Model**
  - A more comprehensive model (Figure 1) was generated in this DSS by combining and revising
    - the "updated DeLone and McLean Information System model" [3]
    - the dimension of "Safety Quality"[4]

- **Evaluation Instrument**
  - A Likert-scale was used in the questionnaires and answers were assigned a value of 1 to 7 from "strongly disagree" to "strongly agree".
  - Forty seven questions with a free-text question were developed to measure 7 dimensions.

- **Performing this research**
  - Research questionnaires were provided for the physicians in five clinical departments.
  - The questionnaire were collected from May to the middle of June in 2006.

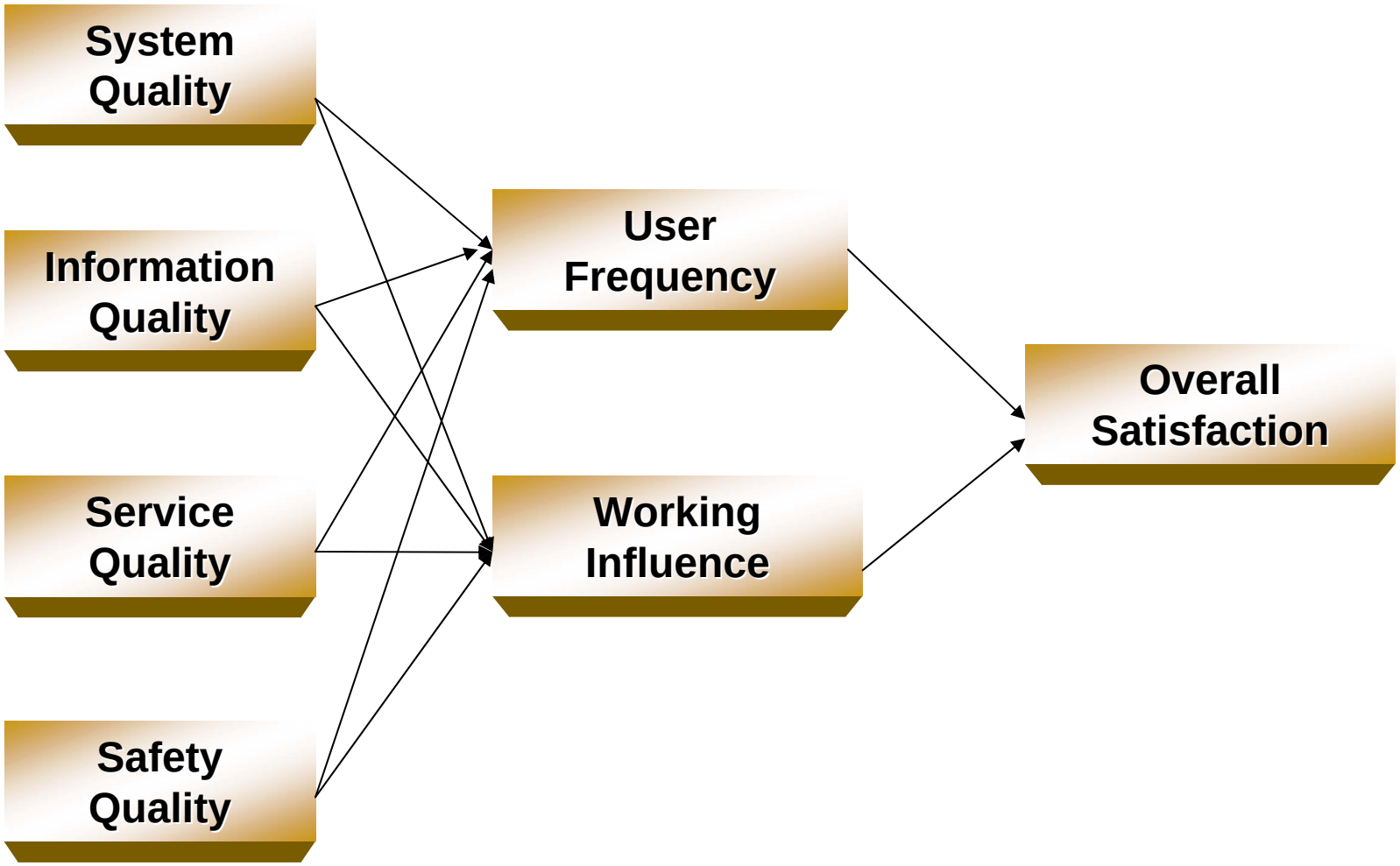

Figure 1 Evaluation model

Results

- The response rate of this research was 71.7% (33 of 46 physicians).
- The data were analyzed by using the SPSS 13.0 statistical software package.
- Demographic data are shown in Table 1.
- "Reliability analysis" was conducted and the Cronbach's α value of "reliability analysis" shown in Table 2.

Results

Table 1 Demographic Characteristics of Study Sample (N=33)

	Characteristic	Sample	Percentage
Clinical departments	Internal Medical	9	27.2
	Surgery	7	21.2
	Pediatrics	5	15.2
	Obstetrics and gynecology	6	18.2
	Eneurology	6	18.2
Gender	Male	11	33.3
	Female	22	66.7
Age	21-25	7	21.2
	26-30	18	54.5
	31-35	6	18.2
	36^{+}	2	6.1

Results

Table 2. Cronbach's α value of this research questionnaire

Dimensions	Cronbach's α value	Corrected Item-Total Correlation	Items	P value
System Quality	0.872	0.642 – 0.776	4	0.018
Information Quality	0.951	0.772 – 0.892	7	0.000
Service Quality	0.916	0.677 – 0.796	8	0.000
Safety Quality	0.839	0.429 – 0.681	7	0.000
User Frequency	0.865	0.627 – 0.841	4	0.001
Working Influence	0.948	0.744 – 0.902	7	0.000
Overall Satisfaction	0.957	0.826 – 0.935	5	0.014
Total Dimensions	0.968	0.299 – 0.859	42	0.000

α = 0.005

Discussion

- **To summarize the salient features of the analysis, several findings are of interest, and three reasons could be cited to explain this result.**
  - **Firstly**, both "literature review" and "Delphi method" are important techniques in designing a research questionnaire.
  - **Secondly**, it is essential to adopt clinicians' suggestions, to realize end-users' opinions and use suitable wording in such an evaluation study.
  - **Thirdly**, HIS/EMRs evaluation is very difficult to perform in a real medical environment because healthcare professionals are extremely busy with patient care.
    - Thus, it needs to get the support and cooperation of healthcare professionals' to complete and gain useful data from them.

Discussion

- **"Safety Quality" could be incorporated into the "updated DeLone and McLean Information System model" based on the aspects of technology.**
  - These attributes could be used to measure whether an EMR system could protect the privacy of patient records.

- **It still needs further research to demonstrate this result by using "Factor analysis" with large samples (more than 200) "[5].**
  - A "good" research questionnaire needs to satisfy the requirements of both "reliability" and "validity".

Conclusion

- **This research demonstrates the essential factors in such evaluation research.**
  - Quantitative and Qualitative approach of cross-sectional survey design,
  - Literature review,
  - Delphi method,
  - Cooperation with healthcare professionals to realize their insight opinions of implementing EMRs.

- **"Safety Quality" could be regards as an important dimension for EMRs evaluation study.**

- **The next stage of this research will further refine this instrument for Taiwanese EMRs evaluation.**

Reference

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