

Organizational and behavioral determinants of health information system performance in Iraq

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ABSTRACT

Background: Health information systems in most countries are inadequate in providing the needed management support and the current health information systems are therefore widely seen as management obstacles rather than as tools,

Objectives: the current study is an attempt to assess the behavioral and organizational determinants of health information system performance in Iraq.

Methods: A cross-sectional study was conducted by interviewed a total of 189 respondents selected from six Iraqi governorates. The Organizational and Behavioral Assessment Tool was used to measure the behavioral and organizational determinants of health information system performance, it is one of the PRISM package tools that are used to assess the health information system performance.

Results: The overall mean confidence for Health information system tasks was 69.41%, while for tasks competence, it was 37.1% and that of motivation level was 43.4%. The total

score of promoting a culture of information was 63.96% with department provide reward for a good work revealed a total percent of 56.83%.

Conclusion: It can be concluded that overall mean confidence for Health information system tasks is generally high compared to a low competency level for Health information system tasks, with a negative motivation feeling among respondents.

Keywords: Health information system, organizational and behavioral determinant, OBAT tool, culture of information.

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Health information system (HIS) is defined as integrated efforts to collect, process, report and use health information and knowledge to influence policy making, program action and research¹. The primary goal of the HIS is to support evidence based decision and action in the health sector².

Although it is understood that improvement of the situation requires "accurate information", many developing countries do not have reliable health management information systems³, many describe it as highly unreliable and disorganized⁴. In addition to that health information systems in most countries are inadequate in providing the needed management support^{5,6}.

Current health information systems are therefore widely seen as management obstacles rather than as tools. The reasons can be due to irrelevance of the information gathered⁷, Poor quality of data^{8,9}, Duplication and waste among parallel health information systems¹⁰, Lack of timely reporting and feedback¹¹, Poor use of information^{12,13}, Lack of HIS policy framework and its application to plans, projects and actions¹⁴, Relative HIS weak structure and limited resources¹⁵.

Quality and timely data from health information systems are the foundations of the health system and it is considered as a core building block of the health system as a whole^{16,17}, as within the health sector, choices made in the collection and use of information will determine the system effectiveness in detecting health problems, defining priorities, and allocating resources to improve health outcome¹⁸. The World Health Organization (WHO) has long

identified health information systems as critical for achieving health for all by the year 2000¹⁹, as the 1978 Declaration of Alma Ata²⁰ provided an opportunity to develop HIS to reflect broader development needs with an emphasis on inter sectoral harmonization of the information systems.

The decision for investing in National HIS are justified on a basis of the needs for information to support decision making and action in the health sector, the feasibility and the cost benefit of the implementation²¹.

It is essential and practical step here is to know the organizational and behavioral determinants of the HIS performance in the country and to compare them to other countries, this has been done by using practical tool which is the OBAT tool (Organizational and Behavioral Assessment Tool) which is one of the PRISM package tools produced by Measure Evaluation that are used to assess the HIS performance²².

So, the aim of this study is to assess the behavioral and organizational determinants affecting HIS performance in Iraq.

Methods. A cross-sectional study was conducted for the assessment process from the 1st of September 2013 to the 1st September 2014, a total of 189 respondents selected from six Iraqi governorates were interviewed, and these governorates (Baghdad, Diyala, Saladin, Karabala, Sulaimania, and Theqar) were selected randomly. 141 respondents were from health facilities, 18 respondents were from districts and 30 respondents were from Health directorates. All of the respondents were involved in health information system activities. Either they were the person in

charge of the facility, HIS focal person (Statistic unit in charge) or director or head of divisions of these departments.

The OBAT tool was used to measure the behavioral and organizational determinant of HIS performance; it is one of the PRISM package tools produced by Measure Evaluation together with John Snow, Inc., that are used to assess the HIS performance⁽²²⁾. The OBAT assesses perceptions about the organization through a rating scale. The scale is about assessing the intensity of beliefs and ranges from "strongly disagree" (1), to "strongly agree" (5).

Strongly disagree 1	Disagree 2	Neither disagree Nor agree 3	Agree 4	strongly agree 5
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Behavioral Determinants; Self-efficacy or Confidence Level for HIS Tasks: are assessed on scale of 0 to 100 from no confidence to full confidence in performing a particular HIS task. The self-efficacy or confidence percentile scores for HIS tasks are calculated for checking data quality, calculation, plotting the given data, interpretation and information use.

HIS Task Competence: Task competence was measured by asking the respondent to solve a problem in a pencil-paper test

Results. Behavioral Determinants, Self-efficacy or Confidence Level for HIS Tasks; Figure 1 provides the results of the data on confidence level. It shows that overall mean confidence for HIS tasks is 69.41%. The results showed that the average confidence level for checking data quality, calculation and data plotting was between 74.6% and 66.77%, being data interpretation the lowest with 64.55%. In general respondents also believed that performing HIS tasks bring about negative outcomes, (average motivation level was 43.4%).

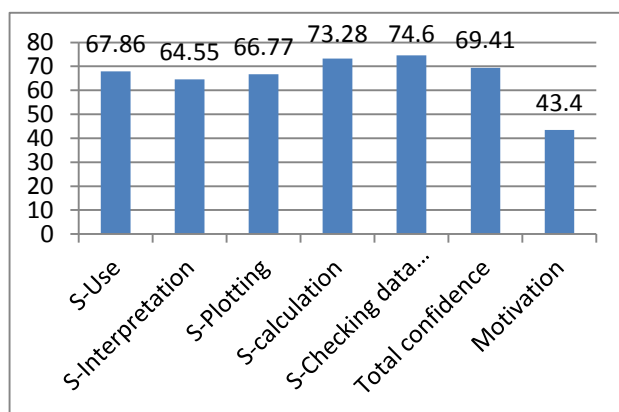


Figure 1: Mean comparison among perceived Confidence Level for HIS Tasks.

HIS Task Competence; the overall mean competence level of HIS tasks is 37.1%. When individual tasks were reviewed then it showed that respondents on average completed only 35%, 21% and 18% of the data quality check, interpretation and use of information tasks respectively, while on average 62.43% and 48.15% tasks

were accomplished related to calculation and plotting the given data Figure 2.

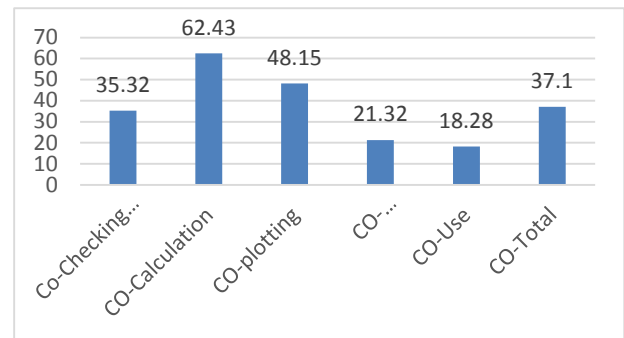


Figure 2: Mean comparisons among observed HIS Task Competence.

Figure 3 shows that there is a gap among perceived and observed tasks when comparing average confidence level of HIS tasks with average level of HIS tasks competence.

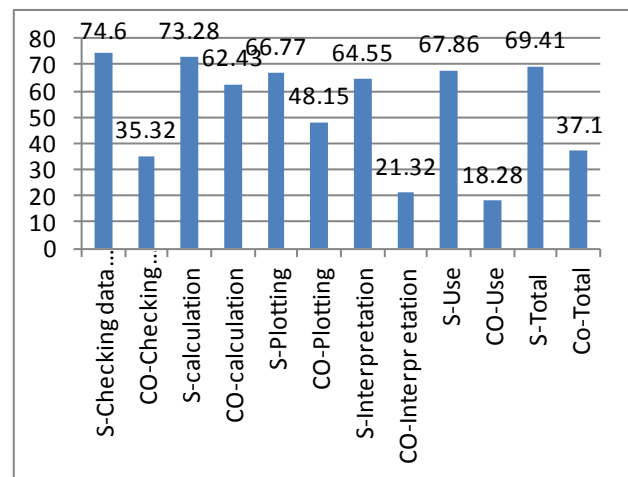


Figure 3: Mean comparisons among perceived confidence and observed HIS task competence.

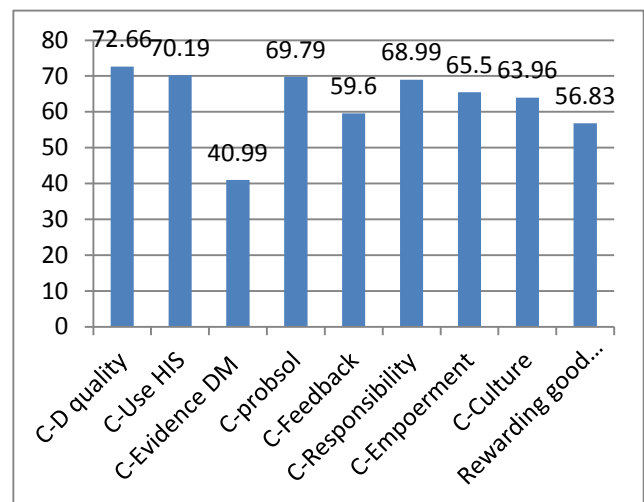


Figure 4: Mean comparisons among different dimensions of culture of information (N=189).

Organizational Determinants; Perceived Promotion of a Culture of Information: The PRISM framework assesses a

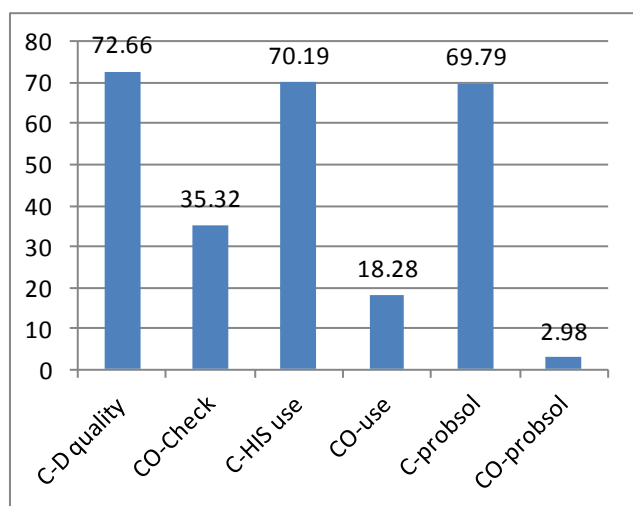


Figure 5: Mean comparisons among promotion of culture of information and HIS task competence (N=189).

culture of information by determining how strongly people believe that the health department promotes values like: 1. Emphasis on data quality, 2. Use of HIS information, 3. Evidence based decision making, 4. Problem solving, 5. Feedback from staff and community, 6. Sense of responsibility, 7. Empowerment and Accountability.

The results revealed a total score of promoting a culture of information was 63.96% and being 72.66%, 70.19%, 40.99%, 69.79%, 59.6%, 68.99% and 65.5% for Emphasis on data quality, Use of HIS information, Evidence based decision making, Problem solving, Feedback, Sense of responsibility and Empowerment respectively as shown in figure 4. Department provides reward for the staff for a good work revealed a total percent of 56.83%.

Comparing perceived promotion of data quality, use of information, and problem solving and observed HIS task competence showed that there is a gap among them, figure 5.

Discussion. Behavioral Determinants; The PRISM framework hypothesizes that behavioral factors are important determinants of HIS performance. HIS users' demand, confidence, motivation and competence to perform HIS tasks affect HIS processes and performance directly²⁴. Understanding why some information/data is collected illustrates the level of data demand for HIS information. Problem solving is another skill that is necessary to using data for identifying and solving the problem²⁵.

The results showed that overall mean confidence for HIS tasks is 69.41%; it is lowest for interpretation (64.55%) and highest for checking data quality (74.6%), while confidence for other tasks lies in between lowest and highest confidence level. It indicates that respondents feel less confident in interpreting data and using information, while more confident in checking data quality.

The overall mean competence level of HIS tasks is 37.1% indicating that the respondents were able to accomplish about one third of the given HIS tasks, being the highest for calculating indicators and lowest for information use and data interpretation, indicating that they were not proficiently enough in those tasks.

High confidence level for HIS tasks is supposed to be associated with high level of HIS task competence. Comparing average confidence level of HIS tasks with average level of HIS tasks competence showed that there is a gap found between confidence and competence levels. However, there were important gaps found between confidence and competence levels for checking data quality, plotting, interpretation, and use of information, indicating that respondents perceived high confidence in checking data quality, plotting, interpretation and use of information but could not perform in practice. The reasons for this discord could be explained that there is limited training on data interpretation and use of information, which does not allow respondents to self-assess their perceived confidence level, and their actual data interpretation and use skills properly, creating the gap.

HIS task competencies in terms of checking data quality, analysis and use of information are limited in most countries.

Figure 6 shows a gap between self-perceived capacity and real competencies to carry out the functions of the HIS among HIS staff at health facility level²⁶.

Promotion of a Culture of Information; The assessment results showed that respondents on average (mean=63.69%) strongly believed that health department promoting a culture of information i.e. emphasizes data quality, promotes use of HIS information, problem solving, feedback, sense of responsibility and empowerment. The only exception was for the indicator "evidence-based decision making" where average perception dropped to 40.99%, this indicator may be lower than the rest as a result of political interference and/or superiors' directives which could affect evidence-based decision-making.

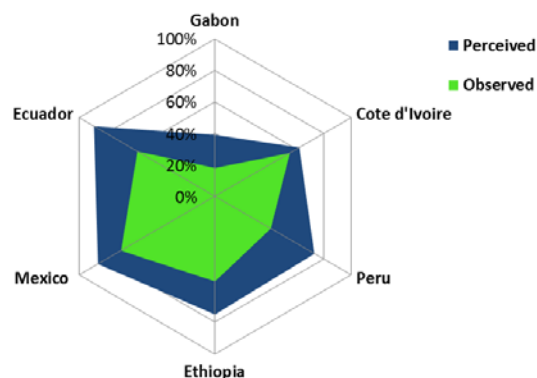


Figure 6: self-perceived capacity and real competencies among HIS staff in different developing countries.

The PRISM framework assumes that if organizations promote a strong culture of information they will also improve their competence levels in conducting HIS tasks, and thus improving their self-confidence to carry out HIS tasks²⁷.

On average respondents believe strongly that department promotes data quality, use of HIS information and problem solving which means it might also found a high level of HIS competence in that areas. A comparative analyses showed that it is

not the case and in practice the respondents' perceptions did not match observed competence levels for checking data quality, use of information and problem solving, and the analysis showed that there are still gaps from 37 to 67 percentile points between perceived promotion of data quality, use of information, and problem solving and observed HIS task competence.

There are many possible reasons for this gap. First, the respondents might have exaggerated perceptions of the promotion of an information culture by the health department. Second, they might be unaware of the existing situation or tried to paint a better picture of the department than the reality. On the other hand, competence is measured objectively through a pencil-paper test thus reducing the possibility of over estimation. There is a need to improve this gap to improve HIS performance further.

It can be concluded that overall mean confidence for HIS tasks is generally high compared to a low competency level for HIS tasks. Perceived promotion of a culture of information were generally high which did not match observed competence levels creating a gap between perceived promotion and observed HIS task competence.

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