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High Performing Hospital Enterprise Architectures

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Motivation / Problem

US Healthcare Industry at a glance:

- In 2005 expenses were more than 16% of the GDP, and hospital care alone accounted for the largest portion of expenditure, 30.8%.
- In 2000 medical errors in hospitals are suggested as the 3rd leading cause of death in the nation (as many as 98,000 a year).

The Healthcare industry is a complex socio technical system:

- > Comprised of multiple stakeholders driven by incentives which often times are not aligned with one another.
- > With compromised ability to deliver to the patient the appropriate care, at the appropriate time, at the appropriate location, and at an adequate cost.

Hospitals find themselves scrambling to cope with:

- > A broken system that continuously issues new requirements, shortens available budgets, and demands the latest innovations.
- > The absence of a systematic approach that encompasses the whole enterprise, both within and outside immediate boundaries of control.

Key Questions

1) How should hospital enterprise performance be measured?

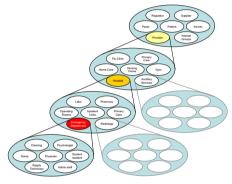
2) How does hospital enterprise architecture relate to hospital enterprise performance?

Methodology

	Phase I	Phase II
Research Question	1	1 and 2
Research Method	Multiple case studies	In depth embedded unit case study
Unit of Analysis	Hospital	Patient centric pathway clusters
Population	7 hospitals	At least 50 clusters out of 50K pathways
Data Sources	Literature, interviews, and documents	Literature, interviews, docs, archives, survey, obsv.
Interviews	4 to 5 per hospital, totaling 28 to 35	Approx. 40
Sampling	Illustrative	Illustrative and Theoretical
Grounded Theory	Yes	Yes
Quantitative Analysis	Yes	Yes

The Research

Early 2007, an integrated multi specialty group practice and academic medical center, voiced concern about its Emergency Department (ED).



Study results yielded:

- Tactical mindset and change initiatives had led to local sub optimization
- > ED did not operate in a vacuum and competed for resources elsewhere in the hospital
- Disparate electronic medical records crippled the organization
- Significant problems were beyond immediate organizational control

Hypothesis: Multiple configurations of Enterprise Architecture exist within a single hospital yielding varying degrees of performance

Phase 1

- > Performance is a multi dimensional construct which is often measured in one or two dimensions at most (i.e. financial and operational)
- > Hospitals targeted illustrate different typology (academic, community, multi specialty, network, single) and excellence criteria. Sample includes mainly Boston hospitals and specific leading hospitals (Mayo Clinic, @NHS, etc).
- > Systematic and iterative use of hybrid research design to determine what is hospital performance and how it should be measured and used in Phase 2

Phase 2:

- In depth study of muti specialty group practice consisting of 3 medical centers and 11 community based primary care group practices with academic ties
- > Systematic and iterative use of hybrid research design to characterize different Enterprise Architecture configurations and measure their performance

Preliminary Results

Two month exploratory research conducted at two leading hospitals, one in the UK and another in the US:

- > Despite very different regulatory and payment environments both sites exhibit similar operational and strategic issues
- > Different aspects of Enterprise Architecture prevalent at each site
- > Multiple configurations of Enterprise Architecture were present within each single hospital and vary in performance

Remaining Research

Phase 1:

- > Finalize analysis and publish findings on exploratory comparison of two leading hospitals (UK and US)
- > Finalize interviews and data analysis yielding hospital performance measurement

Phase 2:

- > Data mining of patient flow pathway clusters and measurement of performance
- > Theoretical sample of polar and trend cases of cluster performance
- In depth study of clusters characterizing individual Enterprise Architecture configurations and determining relation to measured performance
- > Publish results

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