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Strategic Value of Cloud Computing in Healthcare organisations using the Balanced Scorecard Approach: A case study from A Saudi Hospital

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Abstract

The evolution of Cloud Computing over the past few years has the potential to provide many benefits for healthcare organisations. However, healthcare organisations still need to discover the strategic values of adopting such a technology model. The paper discusses the strategic value of implementing Cloud Computing solutions in a Saudi hospital based on the Balanced Scorecard Approach. The paper also presents the strategy map and the KPIs that were used by the hospital. The results of this paper (KPIs, strategy map.) could act as guidelines for similar projects and similar organisations, while taking into consideration the uniqueness of each organisation.

Keywords: Cloud Computing; e-health; Balanced Scorecard; Saudi Arabia; Case Study.

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1. Introduction

Healthcare providers look to use Information Technology (IT) to gain the competitive advantage that IT usually provides. A Health Information System (HIS) is an integrated system that involves people, processes and technologies to support healthcare services [1] and includes financial, administrative and clinical aspects. The benefits of implementing IT solutions in healthcare organisations include enhancing medical practices, supporting decision-making processes and simplifying information sharing [2]. However, current e-health practices face many challenges which include technical difficulties such as complexity, compatibility and insufficient IT infrastructure and financial and organisational issues such as the higher cost of implementing HIT projects [3]. Studies also showed that there are doubts about the value of implementing HIT projects among health professionals and hospital administrators [2].

The Balanced Scorecard (BSC) is a managerial tool that defines the current and potential status of the organisation based on specific and targeted objectives and measurements. BSC goes beyond typical performance measurement to be a popular strategic management tool that has been used widely [4]. The strategy map which is a central component of BSC is found to be beneficial for organisations by allowing better strategy execution [5]. The strategy map also allows the visualisation of organisations' strategic goals which facilitates strategic discussions among the mangers and other groups [6]. The BSC was chosen for this study because of its popularity among Saudi organisations and the flexibility it provides when making modifications to the perspectives [7]. Cloud Computing is an emerging IT model and understanding the potential value of Cloud Computing is important and could encourage the organisations to adopt this model of computing [8].

The aim of this paper is to show the strategic value of adopting Cloud Computing to healthcare organisations based on the balanced scorecard approach. This paper is organised as follows. Section II presents the concept of Cloud Computing. Section III describes the balanced scorecard and its implementations in a Saudi hospital. Section IV presents the analysis and expected result of the Balanced Scorecard followed by discussion of the study. Section VI concludes the paper.

2. Cloud Computing

Cloud computing is an emerging paradigm for delivering IT services used in many industries and sectors [9]. Cloud Computing can be defined as "an information technology service model where computing services (both hardware and software) are delivered on-demand to customers over a network in a self-service fashion, independent of device and location. The resources required to provide the requisite quality-of-service levels are shared, dynamically scalable, rapidly provisioned, virtualized and released with minimal service provider interaction" [10]. Based on the deployment model, Cloud Computing can be divided into four types [10]. A public Cloud is a publicly accessible Cloud environment owned by a third-party Cloud provider. A private Cloud is owned by a single organization. Private Clouds enable an organization to use Cloud computing technology as a means of centralizing access to IT resources by different parts, locations, or departments of the organization. A community Cloud is similar to a public Cloud except that its access is limited to a specific community of Cloud consumers. A hybrid Cloud is a combination of a public and private Cloud where core business processes are kept within the organisation and non-critical processes are outsourced to the public Cloud provider. Cloud services can be offered as Software as a Service (SaaS), Platform as a Service (PaaS) or Infrastructure as a Service (IaaS). For healthcare organisations, Cloud Computing could offer some opportunities such as: reducing the cost of IT services, providing better patient care, supporting research activities [3]. However, healthcare organisations still have some concerns about Cloud Computing services such as the risk of systems unavailability, data security and privacy issues [3]. Very little academic research has addressed the Cloud Computing phenomenon in Saudi Arabia [11] and, in particular, none within the Saudi healthcare context. In this paper, we will discuss the adoption of Cloud Computing at a Saudi hospital to understand the potential value of Cloud Computing based on Balance Score Card (BSC) methodology.