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Gamification of Enterprise Systems: A Lifecycle Approach

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Abstract

Introducing an Enterprise Resource Planning (ERP) system within an organization can bring many benefits and paybacks, yet an effective implementation of a fully functioning ERP system is still a challenge. The odds are high the costly investment might turn into an implementation failure or even lead to bankruptcy. To prevent such situations, organizations need to go through several changes, and carefully manage the critical success factors affecting each stage of the ERP implementation lifecycle, respectively. Previous studies have observed that the majority of the challenges faced during the implementation of ERP systems arise from social and organizational aspects rather than technical ones. This is where gamification comes to the rescue. This research adopts a design science paradigm in an attempt to develop a gamified process for the ERP lifecycle, to ease and enhance the ERP implementation process. The objective of this research is threefold. Firstly, to explore the benefits ERP systems can render via the gamification of the ERP lifecycle. Secondly, to pinpoint the ERP lifecycle phases that are most likely to benefit from gamification. Thirdly, to gamify these formerly identified phases; that were found to be mostly affected by gamification, and test for the impact of gamification on them.

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Keywords: Enterprise systems; ERP; implementation lifecycle; gamification; design science.

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1. Introduction

ERP systems play an increasingly important role in today's contemporary business technology management; by enabling organizations and enterprises gain competitive advantage in the demanding business environments. They have become essential for organizations in keeping their activities running smoothly, while aligning diverse business processes to support the organization's strategy; by weaving these processes into an integrated and collaborative system. Thus, due to the many benefits that ERP systems offers, more corporations invest in them, either in traditional ERP or cloud ERP system solutions, resulting in a massive increase in the market for ERP systems profits from $17.2 billion in 1998 to more than $78 billion by 2016 invested in SaaS ERP solutions [1, 2].

These organizations and industries have made significant investments in ERP systems to enable them to synergize the 4M resources (man, money, material, and machines). Over 60% of the Fortune 500 companies have been found to adopt ERP systems, in order to integrate their business data and support their critical business functions [1, 3, 4].

Nonetheless, ERP systems' implementation requires a substantial amount of financial, human and technical resources to succeed in business reality. As a result, ERP implementations are classified as one of the most expensive business information technologies in the corporate world [5, 6], with most of the resources consumed in the implementation stage, rather than the pre and post implementation stages [3, 7]. Still, despite the huge investments in ERP systems, benefits after implementation are not guaranteed [4]. Companies perceive the benefits from ERP systems depending on the success of the implementation process. Thus, organizations need to go through several changes, and carefully manage the critical success factors affecting each stage of the ERP implementation lifecycle respectively to lessen the project's tendency to fail. This is where gamification becomes critical.

Gamification is a new trend under which all activities are subsumed, trying to introduce game mechanics into non-gaming applications in order to increase user engagement, motivation, and participation, bringing increased openness and visibility [8, 9, 10]. Gamification provides space for experimentation, so they are not only challenging but also aim to change behaviors and perceptions through the use of psychological techniques and game elements.

Indeed, gamification is increasingly catching the attention of researchers in areas such as e-commerce, health, education, learning platforms, and tourism [11, 12, 13, 14]. It is especially promising in the enterprise domain since enterprise systems mainly focus on efficiency aspects. Prior research has shown that gamification can lead to higher positive organizational outcomes, e.g., job performance, employee engagement and thus the overall job and organizational performance [10, 15].

Thus, this project aims to incorporate gamification concepts into the ERP implementation lifecycle, in an attempt to ease and enhance the ERP implementation process. The gamified process entails the use of real time strategy games, taking the ERP implementation process to the next level to differentiate it from the traditionally known ERP implementation. The expected contribution of this project is the development of a gamified ERP implementation methodology. The gamified implementation process would go beyond the current practices, towards reducing the implementation risks, realizing more value, at less time and cost consuming processes.

By adopting the former, organizations would be able respond to their dynamic needs in a less risky manner, enhance the usage intentions by proving a better suited ease of use, usefulness, efficiency, productivity, and foster employees' engagement and motivation. Thus, lessen the failure tendency associated with ERP implementation projects, as well as improving organizations' operational efficiency and core competencies.

2. ERP Lifecycle

ERP adoption projects vary in size, methodology, and structure. Nonetheless, the system's implementation process requires a systematic and careful management, monitoring, knowledge management and decision making [3, 16]. The adoption process happens in phases, those phases are usually referred to as ERP lifecycles. Several authors have developed different ERP lifecycle models and frameworks. Indeed, Esteves and Pastor (1999), Markus and Tanis (2000), and Somers and Nelson (2004), remain the mostly adopted models in ERP literature [17, 18, 19]. These models usually include several phases, like adoption, selection, implementation, use and maintenance, and evolution [16], most of which can be categorized in pre-implantation, during implementation, and post implementation phases – table 1.