



# Empirical investigation of key business factors for digital game performance <sup>☆</sup>



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## ABSTRACT

Game development is an interdisciplinary concept that embraces software engineering, business, management, and artistic disciplines. This research facilitates a better understanding of the business dimension of digital games. The main objective of this research is to investigate empirically the effect of business factors on the performance of digital games in the market and to answer the research questions asked in this study. Game development organizations are facing high pressure and competition in the digital game industry. Business has become a crucial dimension, especially for game development organizations. The main contribution of this paper is to investigate empirically the influence of key business factors on the business performance of games. This is the first study in the domain of game development that demonstrates the interrelationship between key business factors and game performance in the market. The results of the study provide evidence that game development organizations must deal with multiple business key factors to remain competitive and handle the high pressure in the digital game industry. Furthermore, the results of the study support the theoretical assertion that key business factors play an important role in game business performance.

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## 1. Introduction

Over the past three decades, digital games have emerged as an important part of media and global entertainment. The digital game sector is creative, dynamic, pervasive, and exciting. The social media revolution and ever-increasing Internet expansion are driving phenomenal growth for the digital game segment in particular and are creating a huge multimedia business worth billions of dollars. The digital game sector, especially video games, is expected to grow by up to USD 112 billion in sales by 2015 as reported by Gartner Research [1], and overall growth of the digital game sector is expected to reach USD 82.4 billion by 2015 [2]. Digital game development organizations are looking at new ways to improve existing user experiences, to engage a broad range of consumers, to update their business models, and to include emerging technologies in their development processes. The digital game sector has been identified as a significant contributor to economic growth by many countries around the world, and these countries have embraced aggressive action plans for its growth [3,4]. In the

digital game industry, Kerr [5] identified four distinct segments: standard PC, console, casual, and massively multiplayer online games. Organizations in each segment have a different culture for production and entry to market and are structured differently. Game development organizations are directly or indirectly involved in various activities from a game's inception to its consumption. These main activities in general terms, regardless of game genre or particular segment, can be grouped together as: (a) development or production; (b) commercialization or publishing; (c) distribution; and (d) customer engagement. Production or development is a major multidisciplinary activity that involves merging of technical and creative disciplines. The development process involves planning, design, development, and test phases and is a kind of iterative process. The publishing activity involves either developing games in-house and outsourcing publishing of developed games or else purchasing of games from independent studios by publisher companies. Outsourced publishing activities can include data hosting, billing, marketing and advertising, intellectual property management, and analytics. Distribution activity is different for online and packaged games. For online games, intermediaries like virtual windows can be used for their distribution. For packaged games, distribution includes handling and packaging of games as well as marketing and logistics. Distribution activities can also be outsourced by game companies. Customer engagement

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includes customer support activity; some companies also outsource customer support to achieve cost savings.

However, the main development activities in the digital game sector especially from business perspective include elements of the game development value chain, such as technical and creative development, manufacturing of hardware/console platforms, and game publishing. Distribution can be carried out in a number of ways, including mobile, traditional retail, online, cloud, and download, and after distribution, it also involves customer engagement and community management activities. Game development organizations have also outsourced some of their support services activities such as data hosting, information security, marketing and advertising, billing services, and piracy protection. The number of dimensions involved, such as types of end-user devices or platforms, game genres, channels for publication, and emerging revenue models in the digital game sector, make this sector highly fragmented. It is important for any type of business domain to identify its key important factors that help them to excel in that particular field. The key business factors vary from domain to domain depending upon their business operation. Digital game is kind of software product and it is intangible in nature. According to Levitt [6], intangible products are highly people-intensive in their delivery methods and production and business management become more critical for them as compared to tangible products. Moreover, digital game industry growth is tremendous and it became crucial to identify key important business factors that help organizations in digital game industry to reach their maximum potential. Game development organizations must target all these dimensions to retain and maximize their consumers. The digital game industry has shown economic potential in both the entertainment and software industries [2].

### 1.1. Research motivation

Organizations involved in the game development business are facing stiff competition and high consumer expectations because more and more development companies are entering the digital game industry day by day. The main research motivation behind this study is the rapid and continual changes in technology and the severity of competition in game development organization and it not only affect the business, but also have a great impact on development activities. Actually, the game industry has high economic potential and generates million-dollar projects, it sets high limits and standards for game performance as well as putting high pressure on organizations. To deal with this severe competition and high pressure, game development organizations must make important decisions quickly regarding different business activities because this has become important for financial growth and business performance. Organizations in the digital game industry must respond quickly to changes in the business and technology environment, and if they fail to respond appropriately, then they will not survive long. There are many examples of commercial failure in digital game industry and the most popular one is known as video game crash of 1983 [7]. According to Burnham [7], an expensive low quality games with poor business strategies were flooded in North America. They resulted in complete destruction of US digital game market. Also, Sellers [8] stated that the extra-terrestrial (E.T.) video game and Pac Man for Atari 2600 were two examples that contributed to the failure. Most of the failures in the digital game market such as Commodore 64 Games System, Nintendo 64 DD, Philips Cdi, Shenmue, and Sonic Boom: Rise of Lyric [9], were due to poor business strategies including market orientation, consumer satisfaction, monetization strategy, time to market, etc.

Especially in game development organizations, business becomes the most important factor due to severe competition, the fragmented nature of the business, and the poor software

engineering practices used by most companies [5]. Identification of key factors to handle high pressure and achieve targeted business and game performance has become highly important. However, no studies that address the important factors in digital game business performance have been published in the literature. The main contribution of this empirical study is to investigate comprehensively the interrelationship among key business factors and game performance in the market. This study also provides an understanding of the influence of the key factors identified by showing empirically how they impact the business organization and digital game performance.

The rest of the paper is organized as follows: Section 2 provides the research methodology, and Section 3 describes the results and analysis. Section 4 presents a discussion, and Section 5 concludes the study.

## 2. Literature review

Key business performance factors for digital game organizations are the least addressed area in game development research. The business model for each segment of the game industry is different, and each segment has a different percentage of the revenue share [10]. From a review of the literature, various factors have been identified that contribute to game business performance. The identified factors and the related literature review are described in the following sub-sections.

### 2.1. Customer satisfaction/loyalty

The digital game industry (DGI) is facing dramatic changes because it views customer satisfaction as winning over players for their games. The classical definition of customer satisfaction given by Oliver [11] is “pleasurable fulfillment response toward a good, service, benefit, or reward”. Customer satisfaction must be an integral part of the organization and is a financial metric that can be used to measure business performance. However, the relationship between business performance and customer satisfaction is not always clear. Zeithaml [12] highlighted three problems in measuring this relationship: (a) the time lag between measuring improvement in profit and customer satisfaction; (b) other variables that influence an organization’s profits, such as marketing, price, and competition; and (c) other variables such as organizational behavioral issues that should be included when measuring the relationship. A positive relationship between customer satisfaction and organizational performance has been reported by many researchers in different industries [13–17], but few have explored this relationship in the DGI. Some researchers [18–20] have also highlighted that higher customer satisfaction in any organization is strongly correlated with higher market growth, proving the strong relationship between customer loyalty and customer retention. The DGI has given a lower priority to customer service for its product (the game) and tends to treat it as a commodity. Often, when players do not obtain a response to their problems, they become disappointed. Johnson [21] explored the aspect of customer service in the DGI. He used the critical incidents technique to examine customer services incidents in the game industry and identified negative and positive customer service experiences. The results of this study provided directions for management that helped them with resource allocation, especially in those areas that provided maximum customer satisfaction and dissatisfaction. Based on this analysis, management could take proper measures to ensure maximum customer satisfaction. In commercial games, the concept of customer satisfaction has a very important place. Lu and Wang [22] explored the factors of online game addiction and the role of addiction in online gamer loyalty and customer

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