

Serious Games Adoption in Organizations – An Exploratory Analysis

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Abstract. This paper arises from work ongoing in the GALA (Games and Learning Alliance – Network of Excellence for Serious Games). An exploratory set of case studies were carried out to understand the benefits, barriers and enablers of adopting serious games in companies and non-educational organizations. Serious games are games that educate, train and inform. It could therefore be expected that serious games would play an important role within corporate training, but this seems not to be the case. Five exploratory case studies of SG adoption were collected. There was use of serious games for training (three cases) and for corporate change interventions (two cases). Most of the organizations commissioned the SG from an external party and only in one case did the organization itself develop the serious game. The key finding was that senior management support was critical for serious game adoption in every case. SG adoption was typically limited to a single department or branch/subsidiary of the company.

Keywords: Serious Games, Adoption, Integration, Training, Business, Industry.

1 Introduction

It could be expected that serious games would play an important role within corporate training, but this seems not to be the case. Less investigation has been focused on the integration of Serious Games (SG) in companies. The authors have been carrying out research on the adoption and integration of serious games in companies. This work is being carried out as part of the GaLA - “Games and Learning Alliance”, Network of Excellence on Serious Games. This paper addresses the question of why and how serious games can be adopted/integrated into companies.

There are several ways serious games can be integrated into companies – a classification framework of the ways serious games can be integrated in to companies was devised and validated through a survey of SG cases relevant to business/industry [1]. The four ways of integrating SGs in companies are: as training, as corporate change/strategy interventions, through viral diffusion and as gamification. IT based techniques, such as Serious Games, need to be integrated in companies, however,

integration is a complex and challenging process [7,11]. The literature review showed that there is a dearth of studies of serious games integration in companies. We, therefore, needed to construct a hybrid research framework based on a review of the literature on technology adoption. This framework combined the insights from the technology acceptance model [8] and the diffusion of innovation literatures [12]. The factors which can influence SG adoption were identified as: technological, organizational, environmental, contextual and individual [3,5,10] and SG specific. Five exploratory case studies of SG integration were collected from large organizations. The case studies explored the benefits of serious games, the barriers to adoption and success factors [4]. The adoption case studies have been designed as exploratory case studies. Exploratory, qualitative case studies are more appropriate to support theory development [9], and to capture and understand the social and organizational context in which the phenomenon under investigation occurs [13]. Further, when a phenomenon is still under development (as SGs are), a flexible and exploratory research design is required [6]. A qualitative research design allows both the flexibility and exploration that are required for our investigation of SG integration in organisations.

2 Analysis

The following table provides an overview of the general characteristics of the case study organisations. Most of the case organizations using serious games are large, with employee numbers above 1,000. There is a diversity of industry sectors represented, health, telecoms, banking and the military. Three of the organizations are early adopters of technology and two are first followers. This is in accord with the UK SG adoption survey [2], where 40% of respondents were either early adopters or first followers of new technology. So it seems that a positive attitude to new technology is a prerequisite for serious games use.

Table 1. Summary of Cases, SG Characteristics

	Lego Serious Play	Wallbreakers	Service Game	Afghanistan	OpenSea
SG Use Type	Corporate change intervention	Corporate change intervention	Training/ Viral diffusion	Training	Training
SGs used	Single	Single	Multiple - 3	Single	Multiple - Several
User org is SG developer	No	No	No	Yes	Yes
Commissioned SG	As consultancy	As consultancy	Yes	Internal	Internal
Deployment level	Limited (1 branch)	Limited (1 department)	Limited (1 branch)	Limited	Wide
Participant numbers	200	400	6000	500 annually	20-30

Only two types of use of serious games were present in the cases (Table 1) – for training and for corporate change intervention. One case (Service Game) used the innovative technique of viral diffusion – a distribution method of making the game available to anyone who wants to play it (and not integrating the game into formal training programmes). In most of the cases a single serious game was in use. Only in two cases was more than one serious game in use – three commissioned games in the Service Game and multiple use scenarios in the OpenSea case. In the OpenSea case the organization built a simulator which allowed experimentation with different scenarios. Most of the organizations commissioned the SG from an external party and only in one case did the organization itself develop the SG (OpenSea). In the two corporate change cases the serious game was commissioned as consultancy through the facilitator. In terms of the deployment, or internal diffusion, of serious games it was mostly limited to company branches or departments; only in the case of NATO’s OpenSea was there widespread use. The numbers of participants was generally quite high – in the hundreds, except for OpenSea which was designed for low numbers of users – the emphasis being on quality not quantity.

Table 2 presents the benefits and barriers of SG use in the companies. A number of benefits of serious games were identified in the cases: serious games can get everyone involved; they are the modern way to learn and produce learning results quickly. In the corporate change cases the use of serious games signals a change and this helps to promote the cultural change objectives of the intervention. In the military cases the most important benefit was that SGs allow trainees to experience situations that would be impossible in the real world for reasons of personal safety, cost or time; they thus provide a risk-free training means. SGs were also found to be cost effective and allowed many people to be trained at the same time.

Table 2. Summary of Cases - SG Benefits & Barriers

	Lego Serious Play	Wallbreakers	Service Game	Afghanistan	OpenSea
Benefits	SGs can get everyone involved	The change in means (to SGs) signals a change in culture as well	- modern way of learning - quick to learn	- trainees can experience situations that are impossible in the real world for reasons of safety, cost or time;	- Risk-free; - train many people at the same time - train on hard to replicate situations - cost effective - quicker learning
Barriers	SG duration (1 day) too long	technical oriented company culture	high cost	- minimum computer abilities; - SG development costs	- SGs as a competitor to established programmes - Strategic change: resources, technology & space

Barriers to adoption were found to be SG duration, cost, and that minimum computer skills are required of the participants. The company culture can also be a barrier, whether being technically oriented or anti-game. Barriers during the implementation of serious games also occurred – they are competitors to existing programmes, they can require a strategic change including the reallocation of resources, the provision of PCs and dedicated physical space.

In terms of success factors the cases showed that senior management support was critical for adoption in every case. In two of the cases an SG ‘product’ champion was important for successful adoption. There were a number of factors which enabled the SGs to be successful in use: thorough advanced preparation, use of a facilitator, the SG being based on existing management theories, including the SG in online course platforms and the commitment of several stakeholders in the organization. For a company to develop a serious game a high level IT knowledge, especially that relevant to SGs, was necessary.

3 Conclusion

Serious games have been rising in popularity and very many games have been developed for diverse applications. However, their adoption in companies is still limited. Further, research on how to integrate serious games in companies is in its infancy. The best we can do is to rely on the general technology adoption literature and especially the IT adoption literature. This paper has sought to make a contribution to understanding how serious games can be integrated into companies, what are the benefits, barriers and success factors. A review of the literature on technology adoption was carried out to produce a hybrid research framework which was used to inform the research. The factors which can influence SG adoption were identified as: technological, organizational, environmental, contextual, individual and SG specific.

Five exploratory case studies of serious games integration in companies were carried out. They produced some insights and issues for further investigation. There was use of serious games for training (three cases) and for corporate change interventions (two cases); but not for gamification. In most of the cases a single serious games was in use. Most of the organizations commissioned the SG from an external party and only in one case did the organization itself develop the serious game. The key finding was that senior management support was critical for serious game adoption in every case. Therefore, the question of how the acceptance of senior management was gained needs to be investigated. How was senior management convinced of the benefits and by whom? Further research is required to understand the integration process – the actors involved and how the barriers were overcome. We need to develop a model of the adoption process from initial contact through generating wider buy-in, to the decision to adopt, and to implementation. And after the adoption decision who are the involved actors. Is the role of an SG champion necessary to the success of the adoption process? How were the adoption barriers overcome?

There is the question as to why the extent of SG adoption was limited; in the case studies, adoption was typically limited to a single department or branch/subsidiary of the company. So what are the factors that determine the extent of adoption, is it something to do with the customized nature, or lack of generality, of serious games?

There are a number of limitations for the current research. The first limitation is associated with the exploratory nature of the study and the limited number of cases considered. Although our purpose in using this approach was to collect reasonably good quality data which can be used to identify the important research questions for further investigations. The cases came from large companies and so we do not know if the results apply to small and medium sized companies. The number of people interviewed for the case studies was limited and we need to understand the dynamic of which persons were involved, when and why. We will then be able to identify what their motivation is and how senior management is convinced to make the adoption decision.

The case studies provided some insight into how and why serious games are integrated into companies. The next stage of the work will be to develop a model of the integration/ adoption process based on ones which have been developed for IT systems adoption. From this we can identify who the key actors could be and develop interview questionnaires for them. We can then interview the different actors involved to understand their perspectives and motivations. The extent of involvement of the HR department remains unclear. In two of the cases, the consultancy/intervention cases, HR does not appear to have been involved in the integration process; only in the Service Game case was HR involved.

Understanding serious game's value and researching into how they should be integrated to satisfy both users (companies, employees) and technology (Serious Games) providers, is part of the GALA serious games network mandate and will direct the research in the future.

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