The study described in this paper has set out to explore gamification from a servitization perspective to understand the opportunities and research challenges. A systematic literature review has been conducted to capture key characteristics of differing forms of gamification processes in a servitization context. The findings of our study focus on two areas: (1) structural, organization’s physical bricks-and-mortar attribute and (2) infrastructural, policies and practices in how structural aspects of servitization are to be managed. Six key findings are presented and collectively these contribute to our understanding of the broader gamification technologies that can help to transform servitization. The contribution of our research is twofold. First it captures a set of theoretical framework for analysing gamification in servitization context. Second, it provides an in-depth roadmap in how gamification can be applied to target major challenges in servitization.

Keywords: Servitization, Gamification, Operations Management

1 INTRODUCTION

The Gaming industry is thriving. Gamers around the world are paying to have access to games for completing virtual tasks, purchasing virtual goods and gaining virtual capabilities. Developed on the fringes of contemporary gaming culture, applying gamification to the business world has gained increasing traction in a wide range of fields from education, marketing, computer programming to defence industry. Gamification offers much potential to servitization. Gamification is a new business phenomenon, taking sophisticated game mechanics and applying these elements into a non-game context. Managers can apply gamification to engage and align user communities with their own needs by offering rewards and support tools that channel positive user innovations (Edery and Mollick, 2008). The opportunities through gamification have yet to be fully realized. Despite hundreds of millions of gamers interacting with games on their communities and at home, games remain an untapped opportunity for many businesses. The purpose of this paper is to explore gamification from an servitization perspective to understand the opportunities and research challenges. We review the literature of gamification in an advanced service context, and through this present a framework that captures key characteristics of differing forms of gamification processes. Through this research, we have prepared a foundation that future research can use to expand the understanding of how gamification is applied in servitization.

Keywords: Servitization, Gamification, Operations Management

1 INTRODUCTION

The Gaming industry is thriving. Gamers around the world are paying to have access to games for completing virtual tasks, purchasing virtual goods and gaining virtual capabilities. Developed on the fringes of contemporary gaming culture, applying gamification to the business world has gained increasing traction in a wide range of fields from education, marketing, computer programming to defence industry. Gamification offers much potential to servitization. Gamification is a new business phenomenon, taking sophisticated game mechanics and applying these elements into a non-game context. Managers can apply gamification to engage and align user communities with their own needs by offering rewards and support tools that channel positive user innovations (Edery and Mollick, 2008). The opportunities through gamification have yet to be fully realized. Despite hundreds of millions of gamers interacting with games on their communities and at home, games remain an untapped opportunity for many businesses. The purpose of this paper is to explore gamification from an servitization perspective to understand the opportunities and research challenges. We review the literature of gamification in an advanced service context, and through this present a framework that captures key characteristics of differing forms of gamification processes. Through this research, we have prepared a foundation that future research can use to expand the understanding of how gamification is applied in servitization.

Keywords: Servitization, Gamification, Operations Management

1 INTRODUCTION

The Gaming industry is thriving. Gamers around the world are paying to have access to games for completing virtual tasks, purchasing virtual goods and gaining virtual capabilities. Developed on the fringes of contemporary gaming culture, applying gamification to the business world has gained increasing traction in a wide range of fields from education, marketing, computer programming to defence industry. Gamification offers much potential to servitization. Gamification is a new business phenomenon, taking sophisticated game mechanics and applying these elements into a non-game context. Managers can apply gamification to engage and align user communities with their own needs by offering rewards and support tools that channel positive user innovations (Edery and Mollick, 2008). The opportunities through gamification have yet to be fully realized. Despite hundreds of millions of gamers interacting with games on their communities and at home, games remain an untapped opportunity for many businesses. The purpose of this paper is to explore gamification from an servitization perspective to understand the opportunities and research challenges. We review the literature of gamification in an advanced service context, and through this present a framework that captures key characteristics of differing forms of gamification processes. Through this research, we have prepared a foundation that future research can use to expand the understanding of how gamification is applied in servitization.

Keywords: Servitization, Gamification, Operations Management

1 INTRODUCTION

The Gaming industry is thriving. Gamers around the world are paying to have access to games for completing virtual tasks, purchasing virtual goods and gaining virtual capabilities. Developed on the fringes of contemporary gaming culture, applying gamification to the business world has gained increasing traction in a wide range of fields from education, marketing, computer programming to defence industry. Gamification offers much potential to servitization. Gamification is a new business phenomenon, taking sophisticated game mechanics and applying these elements into a non-game context. Managers can apply gamification to engage and align user communities with their own needs by offering rewards and support tools that channel positive user innovations (Edery and Mollick, 2008). The opportunities through gamification have yet to be fully realized. Despite hundreds of millions of gamers interacting with games on their communities and at home, games remain an untapped opportunity for many businesses. The purpose of this paper is to explore gamification from an servitization perspective to understand the opportunities and research challenges. We review the literature of gamification in an advanced service context, and through this present a framework that captures key characteristics of differing forms of gamification processes. Through this research, we have prepared a foundation that future research can use to expand the understanding of how gamification is applied in servitization.
People have been applying games for a very long time without fully realizing the full scope and diversity of the concept. The ancient Roman empire introduced gladiatorial combat to inspire admiration of Rome’s martial ethics and relieve aggression of ancient Romans (Shelton, 2013). During the Warring State Period of ancient China, Sun Bin an alleged descendent of Sun Tzu was using horse racing to teach military strategies to Chinese aristocracy at that time. Modern day professional sports coach use game concepts to motivate their players to carry out long hours of physically demanding practice in order to produce flawless techniques.

According to Werbach and Hunter (2012) the first use of gamifying online systems was as early as 1980 by Richard Bartle, a pioneer in multiplayer online games, who referred to gamification as "turning something not a game into a game". As an extension to capture the complexity of gamification, Werbach and Hunter (2012) define gamification as "the use of game elements and game-design techniques in non-game contexts".

Gamification design with clear rule, goals and immediate performance feedback describe both the reasons for which the player interacts and the method by which the player can solve problems in the game (Use and Brewster, 2013). These game mechanics can enrich the "flow" experience, which is a psychological space in which the player can be immersed in the present moment, without any distraction from the past and future (Mainemelis, 2001). Clear goals are created through alignment of the player's capability and the level of interaction between the player and the game goals (Deci and Ryan, 2004). When one's skills are much greater than the level of the game, boredom and lack of motivation arise, and when the goal is too difficult, anxiety and frustration will inhibit engagement (Mainemelis, 2001). Clear goals are created through alignment of the player's capability and the level of interaction between the player and the game goals (Deci and Ryan, 2004). When one's skills are much greater than the level of the game, boredom and lack of motivation arise, and when the goal is too difficult, anxiety and frustration will inhibit engagement (Mainemelis, 2001).

Clear goals are created through alignment of the player's capability and the level of interaction between the player and the game goals (Deci and Ryan, 2004). When one's skills are much greater than the level of the game, boredom and lack of motivation arise, and when the goal is too difficult, anxiety and frustration will inhibit engagement (Mainemelis, 2001). Gamification creates immediate performance feedback to the player through providing interactive information concerning the player's performance and indicates what goals have yet to be completed, which is often used in the form of a quest log as is the case with massive multiplayer online role playing games (MMORPG).

People seek out the flow experience in all walks of life, often without realizing it. This can range from people going into a coffee house to innovate creative work, to a professional sports player practicing purposefully in order to win a high tension game. The absorptive capacity of human brains, together with emotions, can react differently to a variety of information presented to them. People seek out the flow experience in all walks of life, often without realizing it. This can range from people going into a coffee house to innovate creative work, to a professional sports player practicing purposefully in order to win a high tension game. The absorptive capacity of human brains, together with emotions, can react differently to a variety of information presented to them.

Gamification creates the flow experience through digital media technologies with advanced support in the form of audio and imaging, allowing reduced anxiety and fun elements enabling a transition into a fully engaging experience (Mainemelis, 2001).

Gamification design relies on human psychology theory and advanced information technologies. Managers can use gamification to drive people's innate motivation and create conditions for a fully immersive "flow" experience that can lead to many forms of operational benefits. For example, game mechanics can drive change among industry, research and institutions to form new organisational structures in order to maximise their gains from these new technologies.

3 METHOD

Gamification in operations management is being addressed by multiple research communities involving business management, computing, human psychology and many others. This systematic review seeks to map out diversity of intellectual domains both within and across time. The aim of this research is to provide a holistic and organizing lens for viewing the various knowledge contributions from multiple research communities addressing the leading thinking with gamification for operations management. To achieve this, our study has set out to address the following questions:

1. Where has it been applied?
2. What has been impact, what are the opportunities?
4 POSITION AND IMPACT OF GAMIFICATION IN ADVANCED SERVICES

Our research design adopted advanced services framework in structural and infrastructural decision categories (Baines and Lightfoot, 2013a) to identify where gamification is being used against each category.

4.1 Gamification and Information Technology

In the industrial age, technology development and innovations are mostly top-down, beginning with the use of professionals in government and business, then moving on to mass consumer markets. In today's world, technologies are top-down, beginning with new product and service concepts, then moving on to mass consumer markets. This trend has shifted the competitive nature in many manufacturing businesses, from gaining cost advantage by offering product with efficient materials, designs, and manufacturing processes to higher level customer services with focus on total experience, which is driven by data embedded within product and services (Shelton, 2013). Managers express increased interest to transform themselves into advanced services, this has led changes to process and information technologies to be built around service delivery with focus on providing the manufacturer with visibility of their product as it is used by the customer (Baines and Lightfoot, 2013).

Operations incorrectly use machine-to-machine frequent service calls, companies can use advanced ICT technologies to capture information about the way in which the product is used and then use this to modify desired behaviour. Gamification is a powerful tool to accelerate and drive behavioural change, virtual currencies and leader board can be designed to trigger intrinsic drive and extrinsic rewards for responsible equipment use behaviour and immediate performance feedback allows early warning for any misuse.

Gamification design can be realistic or fantasy (Lamer et al., 2013) to help advanced service companies to create better understanding of its customer needs and wants. Managers often find low employee awareness and inconsistent interpretation of customer requirements that inhibit their ability for a better interface within the market. Gamification can provide a better understanding of customer production processes (Laine, 2012). The game requires competing teams to seek optimal production processes as to how equipment provided by the company is used. According to Laine (2012) the key purpose of the game is to encourage participation to actively think about how they can help the customer do business more profitably, over the life time of the equipment in use.

The use of gamification with 3D virtual reality allows real time, media-rich and highly interactive collaboration between manufacturers and their customers (Kohler et al., 2009). For example, sales in the pharmaceutical industry are a unique process, salespeople must respond to the varying needs of different doctors to persuade them to adopt the practice of prescribing certain medications. Gamification in 3D virtual reality can help salespeople to improve their response in a variety of situations in virtual pharmaceutical sales (DesignDigital, 2012).

4.2 Gamification and Processes

Organizations often misbelieve if they invest in latest information technologies from off the shelf ERP systems, hire most expensive consultancy boutiques, and build up best in class manufacturing processes, they could drive product into market like speed of light. In reality, and their feet are constantly on the breaks. Introduce radical new product into market can potential make their existing systems, hire most expensive consultancy boutiques, and build up best in class manufacturing processes (Shelton, 2013). This trend has shifted the competitive nature in many manufacturing businesses, from gaining cost advantage by offering product with efficient materials, designs, and manufacturing processes to higher level customer services with focus on total experience, which is driven by data embedded within product and services (Shelton, 2013). Managers express increased interest to transform themselves into advanced services, this has led changes to process and information technologies to be built around service delivery with focus on providing the manufacturer with visibility of their product as it is used by the customer (Baines and Lightfoot, 2013).

Operations incorrectly use machine-to-machine frequent service calls, companies can use advanced ICT technologies to capture information about the way in which the product is used and then use this to modify desired behaviour. Gamification is a powerful tool to accelerate and drive behavioural change, virtual currencies and leader board can be designed to trigger intrinsic drive and extrinsic rewards for responsible equipment use behaviour and immediate performance feedback allows early warning for any misuse.

Gamification design can be realistic or fantasy (Lamer et al., 2013) to help advanced service companies to create better understanding of its customer needs and wants. Managers often find low employee awareness and inconsistent interpretation of customer requirements that inhibit their ability for a better interface within the market. Gamification can provide a better understanding of customer production processes (Laine, 2012). The game requires competing teams to seek optimal production processes as to how equipment provided by the company is used. According to Laine (2012) the key purpose of the game is to encourage participation to actively think about how they can help the customer do business more profitably, over the life time of the equipment in use.

The use of gamification with 3D virtual reality allows real time, media-rich and highly interactive collaboration between manufacturers and their customers (Kohler et al., 2009). For example, sales in the pharmaceutical industry are a unique process, salespeople must respond to the varying needs of different doctors to persuade them to adopt the practice of prescribing certain medications. Gamification in 3D virtual reality can help salespeople to improve their response in a variety of situations in virtual pharmaceutical sales (DesignDigital, 2012).

4.3 Gamification and Information Technology

In the industrial age, technology development and innovations are mostly top-down, beginning with the use of professionals in government and business, then moving on to mass consumer markets. In today's world, technologies are top-down, beginning with new product and service concepts, then moving on to mass consumer markets. This trend has shifted the competitive nature in many manufacturing businesses, from gaining cost advantage by offering product with efficient materials, designs, and manufacturing processes to higher level customer services with focus on total experience, which is driven by data embedded within product and services (Shelton, 2013). Managers express increased interest to transform themselves into advanced services, this has led changes to process and information technologies to be built around service delivery with focus on providing the manufacturer with visibility of their product as it is used by the customer (Baines and Lightfoot, 2013).

Operations incorrectly use machine-to-machine frequent service calls, companies can use advanced ICT technologies to capture information about the way in which the product is used and then use this to modify desired behaviour. Gamification is a powerful tool to accelerate and drive behavioural change, virtual currencies and leader board can be designed to trigger intrinsic drive and extrinsic rewards for responsible equipment use behaviour and immediate performance feedback allows early warning for any misuse.

Gamification design can be realistic or fantasy (Lamer et al., 2013) to help advanced service companies to create better understanding of its customer needs and wants. Managers often find low employee awareness and inconsistent interpretation of customer requirements that inhibit their ability for a better interface within the market. Gamification can provide a better understanding of customer production processes (Laine, 2012). The game requires competing teams to seek optimal production processes as to how equipment provided by the company is used. According to Laine (2012) the key purpose of the game is to encourage participation to actively think about how they can help the customer do business more profitably, over the life time of the equipment in use.

The use of gamification with 3D virtual reality allows real time, media-rich and highly interactive collaboration between manufacturers and their customers (Kohler et al., 2009). For example, sales in the pharmaceutical industry are a unique process, salespeople must respond to the varying needs of different doctors to persuade them to adopt the practice of prescribing certain medications. Gamification in 3D virtual reality can help salespeople to improve their response in a variety of situations in virtual pharmaceutical sales (DesignDigital, 2012).

4.4 Gamification and Processes

Organizations often misbelieve if they invest in latest information technologies from off the shelf ERP systems, hire most expensive consultancy boutiques, and build up best in class manufacturing processes (Shelton, 2013). This trend has shifted the competitive nature in many manufacturing businesses, from gaining cost advantage by offering product with efficient materials, designs, and manufacturing processes to higher level customer services with focus on total experience, which is driven by data embedded within product and services (Shelton, 2013). Managers express increased interest to transform themselves into advanced services, this has led changes to process and information technologies to be built around service delivery with focus on providing the manufacturer with visibility of their product as it is used by the customer (Baines and Lightfoot, 2013).

Operations incorrectly use machine-to-machine frequent service calls, companies can use advanced ICT technologies to capture information about the way in which the product is used and then use this to modify desired behaviour. Gamification is a powerful tool to accelerate and drive behavioural change, virtual currencies and leader board can be designed to trigger intrinsic drive and extrinsic rewards for responsible equipment use behaviour and immediate performance feedback allows early warning for any misuse.

Gamification design can be realistic or fantasy (Lamer et al., 2013) to help advanced service companies to create better understanding of its customer needs and wants. Managers often find low employee awareness and inconsistent interpretation of customer requirements that inhibit their ability for a better interface within the market. Gamification can provide a better understanding of customer production processes (Laine, 2012). The game requires competing teams to seek optimal production processes as to how equipment provided by the company is used. According to Laine (2012) the key purpose of the game is to encourage participation to actively think about how they can help the customer do business more profitably, over the life time of the equipment in use.

The use of gamification with 3D virtual reality allows real time, media-rich and highly interactive collaboration between manufacturers and their customers (Kohler et al., 2009). For example, sales in the pharmaceutical industry are a unique process, salespeople must respond to the varying needs of different doctors to persuade them to adopt the practice of prescribing certain medications. Gamification in 3D virtual reality can help salespeople to improve their response in a variety of situations in virtual pharmaceutical sales (DesignDigital, 2012).
manufacturing and service industries, new products cannot be commercialized without breakthroughs in process technology (Christensen and Raynor, 2003).

The true value of information and process technologies are not just their physical aspect, the key ingredients in their recipe, are the intellectual capital embedded within them. Gamification can be an effective tool for enhancing learning and understanding of complex subject matter (Garris et al., 2002), it has the capability to bridge tacit and explicit manufacturing process know-how that reside in the heads of the scientists and engineers.

Different people are uniquely predisposed to different learning styles. This is because individuals have different ways of perceiving reality. People have consistently searched for ways to escape into a virtual world and current technology is an extension of this. Sometimes, safety and cost reasons can prohibit test and learning to be carried out in the real world, such as navigating a newly designed passenger airplane. Gamification offers cost efficient alternatives to teach employees essential information about the testing and learning context in virtual environment, allowing people to interact with the object, assess their performance and receive feedback to identify area of improvement (Shi et al., 2013). In new product and processing development, testing is required to ensure that new products/services or its prototype function properly before it is commercialized. Gamification allows companies to test and learn in virtual reality before commit themselves before building physical prototype. Gamification can be designed to introduce lower fidelity virtual worlds that could take years to develop and costly to produce into the real world, hand out copies to other users, analyse users’ reaction to the prototype, and gain valuable insights for modifications (Kohler et al., 2009).

4.3 Gamification and Supply Chain

Managers with responsibility for hundreds of product co-development programmes must assure critical technological ingredients are protected, which requires an in depth understanding of the skills between new product design and manufacturing processes (Shi et al., 2012). Extensive outsourcing could endanger skills loss in project management and knowledge transfer that are common in vertical oriented organisation (Hayes, 2005).

Gamification can make arguments about how business systems work and make claims about the world through procedural rhetoric (Bogost, 2008), which is the practice of effective persuasion and expression using processes. The player can interpret these processes and interpret the argument in their lives. For example, a flight simulator program attempts to model how the mechanical and professional procedures in aviation works. Unlike productivity software such as word processors and spread sheets, gamification creates an interactive virtual model allows players to explore through play (Bogost, 2008).

Real life businesses involve unintended consequences and complex interrelationships. Gamification can teach managers learn systems thinking, with a shift away from the “learning by doing” to “learning by designing” (Baines and Lightfoot, 2013a). Managerial decision making involves a chess master, each move requires whole system thinking to attack or protect around strategic patterns, rather than tactical move are knowledge transfer of tacit manufacturing process and business interrelationships such as protection of intellectual property, process technology, R&D, and learning in an interactive virtual environment. This allows managers to learn any unintended consequences before making vertical integration or outsourcing decisions.

4.4 Gamification and Project Management

Production operations traditionally focused on functional planning and control, by specialized group of expert within their own functional field, as result, solutions are mostly predictive and potentially conflicting with other functional planning. Service or product centric operations planning and control systems encompass physical assets, maintenance and service processing, management tend to be structured in a joint manner between delivery arm and commercial arm and customer service groups (Baines and Lightfoot, 2013a). Generating solutions for delivering product availability and functional capability requires a rich mix of people contribute to the project ideas, involving cross functional groups within the company, suppliers, customers and even competitors (Hayes, 2005).

Gamification can teach managers learn systems thinking, with a shift away from the “learning by designing” to “learning by designing” (Baines and Lightfoot, 2013a). Managerial decision making involves a chess master, each move requires whole system thinking to attack or protect around strategic patterns, rather than tactical move are knowledge transfer of tacit manufacturing process and business interrelationships such as protection of intellectual property, process technology, R&D, and learning in an interactive virtual environment. This allows managers to learn any unintended consequences before making vertical integration or outsourcing decisions.
Gamification and Productivity

Good managers inspire their employees to work extremely focused and productive, and in an ideal situation, work should be fun and engaging. The cost of disengagement can be enormous. The United States disengagement cost was estimated about $330 billion a year in last productivity (Pain, 2010). Often managers neglect that employees are as short term incentive plans and pay for performance schemes with less attention on intrinsic motivation such as rewards of recognition or the satisfaction of performing a positive contribution (Shelton, 2013). Intrinsic motivations are difficult to address because individual perceptions and their motivations are more complex and managers often lack effective tools to engage with individual employees.

By introducing game mechanics, gamification can encourage collaboration, encourage information sharing, reward contribution and improve employee morale where monetary incentive may not be necessary. When people are intrinsically motivated, they engage in the activity for intrinsic satisfaction, rather than to gain some outcome separated from the activity (Mainemelis, 2001). Workforces perform best when work is fun and engaging. Increasing complexity of customer needs drive companies to adapt to satisfy varying customer needs. Cultural change requires right performance measures. In the old world communication was expensive, organizational structures were more likely to be hierarchical, where information seekers navigated around information headers to get data and knowledge they seek (Shelton, 2013), operations is generally measured against cost, specification and delivery on time (Baines and Lightfoot, 2013a). In contrast in the new world, where communication cost is near zero, a networked organization is formed to share information and knowledge with everyone (Shelton, 2013).

Gamification can help to create a knowledge sharing culture. Use new information technologies that can move company culture away from core values of developing and hoarding valuable proprietary information and towards the benefit of the entire company (DesigningDigitally, 2012). Managers can use gamification to create fun and energizing workplace, goals and incentives that change intrinsic motivation of each creative individual to develop desired skill set, involving relationship building, flexible, service centric, authentic, technically adept and resilient (Baines and Lightfoot, 2013).

CONCLUSION

Our research indicates that the gamification can be applied with confidence to servitization. Total six areas of advanced services can benefit from gamification, involving, ICT technologies, processes, supply chains, project management, productivity and knowledge management. Although much progress in gamification design, technologies and applications has been made in the recent years, gamification application in the servitization context is still in an exploratory stage. In contrast to the uptake of technology and management techniques in last century, the internet age, a rising population with high tech literacy and open sources on multiple technology platforms will increase the adoption of gamification at rapid pace. Gamification design can create interactive, increasing complexity of customer needs drive companies to adapt to satisfy varying customer needs. Cultural change requires right performance measures. In the old world communication was expensive, organizational structures were more likely to be hierarchical, where information seekers navigated around information headers to get data and knowledge they seek (Shelton, 2013), operations is generally measured against cost, specification and delivery on time (Baines and Lightfoot, 2013a). In contrast in the new world, where communication cost is near zero, a networked organization is formed to share information and knowledge with everyone (Shelton, 2013). Cultural change requires right performance measures. In the old world communication was expensive, organizational structures were more likely to be hierarchical, where information seekers navigated around information headers to get data and knowledge they seek (Shelton, 2013), operations is generally measured against cost, specification and delivery on time (Baines and Lightfoot, 2013a). In contrast in the new world, where communication cost is near zero, a networked organization is formed to share information and knowledge with everyone (Shelton, 2013).

Gamification can help to create a knowledge sharing culture. Use new information technologies that can move company culture away from core values of developing and hoarding valuable proprietary information and towards the benefit of the entire company (DesigningDigitally, 2012). Managers can use gamification to create fun and energizing workplace, goals and incentives that change intrinsic motivation of each creative individual to develop desired skill set, involving relationship building, flexible, service centric, authentic, technically adept and resilient (Baines and Lightfoot, 2013).

CONCLUSION

Our research indicates that the gamification can be applied with confidence to servitization. Total six areas of advanced services can benefit from gamification, involving, ICT technologies, processes, supply chains, project management, productivity and knowledge management. Although much progress in gamification design, technologies and applications has been made in the recent years, gamification application in the servitization context is still in an exploratory stage. In contrast to the uptake of technology and management techniques in last century, the internet age, a rising population with high tech literacy and open sources on multiple technology platforms will increase the adoption of gamification at rapid pace. Gamification design can create interactive, increasing complexity of customer needs drive companies to adapt to satisfy varying customer needs. Cultural change requires right performance measures. In the old world communication was expensive, organizational structures were more likely to be hierarchical, where information seekers navigated around information headers to get data and knowledge they seek (Shelton, 2013), operations is generally measured against cost, specification and delivery on time (Baines and Lightfoot, 2013a). In contrast in the new world, where communication cost is near zero, a networked organization is formed to share information and knowledge with everyone (Shelton, 2013).

Gamification can help to create a knowledge sharing culture. Use new information technologies that can move company culture away from core values of developing and hoarding valuable proprietary information and towards the benefit of the entire company (DesigningDigitally, 2012). Managers can use gamification to create fun and energizing workplace, goals and incentives that change intrinsic motivation of each creative individual to develop desired skill set, involving relationship building, flexible, service centric, authentic, technically adept and resilient (Baines and Lightfoot, 2013).

CONCLUSION

Our research indicates that the gamification can be applied with confidence to servitization. Total six areas of advanced services can benefit from gamification, involving, ICT technologies, processes, supply chains, project management, productivity and knowledge management. Although much progress in gamification design, technologies and applications has been made in the recent years, gamification application in the servitization context is still in an exploratory stage. In contrast to the uptake of technology and management techniques in last century, the internet age, a rising population with high tech literacy and open sources on multiple technology platforms will increase the adoption of gamification at rapid pace. Gamification design can create interactive, increasing complexity of customer needs drive companies to adapt to satisfy varying customer needs. Cultural change requires right performance measures. In the old world communication was expensive, organizational structures were more likely to be hierarchical, where information seekers navigated around information headers to get data and knowledge they seek (Shelton, 2013), operations is generally measured against cost, specification and delivery on time (Baines and Lightfoot, 2013a). In contrast in the new world, where communication cost is near zero, a networked organization is formed to share information and knowledge with everyone (Shelton, 2013). Cultural change requires right performance measures. In the old world communication was expensive, organizational structures were more likely to be hierarchical, where information seekers navigated around information headers to get data and knowledge they seek (Shelton, 2013), operations is generally measured against cost, specification and delivery on time (Baines and Lightfoot, 2013a). In contrast in the new world, where communication cost is near zero, a networked organization is formed to share information and knowledge with everyone (Shelton, 2013). Cultural change requires right performance measures. In the old world communication was expensive, organizational structures were more likely to be hierarchical, where information seekers navigated around information headers to get data and knowledge they seek (Shelton, 2013).
challenging, engaging and media rich environment to help many manufacturing and service operations. However, to deliver gamification and gain acceptance in corporate world are challenging, many organizations may have low tolerance for radical technologies, managers may lack of experience and awareness to implement gamification technologies, game design can be difficult to both engaging and educational.

ACKNOWLEDGMENTS

This work was supported by EPSRC Grants Ref EP/K014064/1, EP/K014072/1, EP/K014080/1 ‘Transforming the adoption of Product-Service Systems through innovations in applied gaming technology’, a joint project with Aston Business School, the Advanced Manufacturing Research Centre, University of Sheffield and the Serious Games Institute, Coventry University.

REFERENCES


Proceedings of the Spring Servitization Conference (SSC2014) 164

This work was supported by EPSRC Grants Ref EP/K014064/1, EP/K014072/1, EP/K014080/1 ‘Transforming the adoption of Product-Service Systems through innovations in applied gaming technology’, a joint project with Aston Business School, the Advanced Manufacturing Research Centre, University of Sheffield and the Serious Games Institute, Coventry University.

REFERENCES


Proceedings of the Spring Servitization Conference (SSC2014) 164

This work was supported by EPSRC Grants Ref EP/K014064/1, EP/K014072/1, EP/K014080/1 ‘Transforming the adoption of Product-Service Systems through innovations in applied gaming technology’, a joint project with Aston Business School, the Advanced Manufacturing Research Centre, University of Sheffield and the Serious Games Institute, Coventry University.

REFERENCES