Examining the Impact of Gamification on website features in E-Banking Sector: A Conceptual Paper

The Paper extracted from the Dissertation under the Title:

Examining the Relationship between Gamification and Customer Experience in E-banking Services

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Doctor of Philosophy Degree in Business Administration

دراسة أثر نماذج الالعاب الجزئية الإلكترونية على خصائص الموقع الالكتروني في قطاع البنوك الالكترونية: دراسة نظرية

بحث مستخلص من رسالة الدكتوراه تحت عنوان

دراسة العلاقة بين نماذج الالعاب الجزئية الإلكترونية وخبرة العميل في قطاع البنوك الالكترونية

رسالة مقدمة للحصول على درجة الدكتوراه في إدارة الاعمال

تحت إشراف :

د/ جمال سيد عبد العزيز   أستاذ مساعد بقسم إدارة الأعمال– كلية التجارة – جامعة القاهرة

د/ سارة أسامة عبد الرحمن   مدرس بقسم إدارة الأعمال– كلية التجارة – جامعة القاهرة

مستخلص الدراسة:

مازال تأثير نماذج الالعاب الجزئية الالكترونية على تصميم البرامج غير واضحا مما دفع البنوك للبحث عن وسيلة جديدة لجذب العملاء للتعامل مع المواقع الالكترونية بدلا من الذهاب الي فروع البنوك وذلك من خلال ادخال تطبيق نماذج الالعاب الجزئية الالكترونية. وبالتالي تهدف هذه الدراسة إلى تطوير إطار نظري يركز على دراسة العلاقة بين نماذج الالعاب الجزئية الالكترونية (كمتغير مستقل) و خصائص المواقع الالكترونية (كمتغير تابع) في مجال البنوك الالكترونية والتي تتضمن سهولة استخدام الموقع الالكتروني، خصائص صفحة الويب، محتوي المعلومات وتصميم الموقع الالكتروني.

Abstract

The influence of gamification on website features is very unclear in the case of e-banking. Therefore, this research aims to develop a theoretical framework that focuses on investigating the effect of gamification (as independent variable) on website features (as a dependent variable) that include ease-of-use, webpage characteristics, website information and website design in the context of e-banking in Washington DC, United states of America.

Keywords: Gamification, Website Features, and E-banking.

Introduction

There has been a gradual growth in the use of information systems and an increasingly significant integration into daily life and work. However, many information systems, particularly in a working or educational setting, are only used out of necessity and not because of their appeal. This leads to user's demotivation, decreased acceptance and unwanted behaviors (Stieglitz et al., 2017). The term of gamification is used to describe an innovative approach using game mechanics in a non-gaming context (Deterding et al., 2011). It is an interdisciplinary approach seeking to motivate users to achieve a specific behaviors or psychological outcomes (e.g., study faster, complete their personal profile, daily use of a specific platform). gamification can be found in different application fields such as sustainability, environmentally conscious behavior, enterprise resource planning, production and logistics or also supporting innovation processes (Stieglitz et al., 2017). Gamification is a good tool for e-banking usage, especially at complex financial transactions. Despite the accessibility of all financial products and services in e-banking, the availability of investment products such as stocks and mutual funds will be very complex to understand from people who have little or no financial education (Lusardi and Mitchell, 2014). Therefore, banks started to develop innovative strategy to increase the website usage through using game features that called gamification where organizations begin to use gamification with the purpose to educate, motivate, engage and influence on employees and\or customers in many different activities (Rodrigues et al., 2016a). Gamification in e-banking plays an important role in driving valuable customer behavior, making complex operations easier and enjoyable, generating engagement with new products and building customer loyalty, so banks will get more money from customers. Additionally, gamification has the role for changing customers' attitudes toward money through making financial management more fun and

eased the financial literacy knowledge. In addition, So, Gamification in e-banking aim to ensure that bank customers visit their websites repeatedly, increasing loyalty and reducing the offline transactions (Rodrigues et al., 2016a). Therefore, this study aims to develop a theoretical framework that focuses on investigating the effect of gamification (as independent variable) on website features as a dependent variable that include ease-of-use, webpage characteristics, website information and website design in the context of e-banking in Washington DC, United states of America.

Research Problem

According to reviewing the literatures related to the relationship between gamification and website features. There is a gap in examining the relationship between gamification and website features. The current study focuses on investigating the effect of gamification (as independent variable) and website features as dependent variable that include ease-of-use, webpage characteristics, website information and website design in the context of e-banking in Washington DC, United states of America.

Theoretical background

1. Gamification

Gamification as a term originated in the digital media industry and relevant to service marketing (Deterding et al., 2011). In this sense, gamification was initially considered as part of design studies and human-computer interactions studies (Dymek and Zackariasson, 2016). Gamification is applied for a variety of purposes such as customer engagement, motivation, education of customers and employees, innovation management, and personal development (Vitkauskaitė and Gatautis, 2018), as well as gamification has already been employed in various contexts that include e-commerce (Insley and Nunan 2014), enterprise resource planning (Alcivar and Abad, 2016), commerce (Hamari, 2017), education (Huang et al., 2018), government services (Bista et al., 2014), exercise and health (Hamari and Koivisto, 2015), mobile marketing (Hwang and Choi, 2020) and intra-organizational management (Farzan and Brusilovsky, 2011). Additionally, gamification has already applied in Recyclebank, McDonald's, Pepsi, Samsung, and Nike, as well as different well-known online service providers such as Facebook, eBay, Foursquare and Twitter applied game elements to get users more engaged on their websites (Insley and Nunan 2014). From the perspective of service marketing, gamification can be defined as "a process of enhancing a service with affordances for gameful

experiences in order to support user's overall value creation" (Huotari and Hamari, 2012, p. 19). This conceptualization is rooted in service dominant logic (Vargo and Lusch, 2004), which suggests that customers are the creators of value, and the company can offer affordances for the customer to establish gameful experience. Gamification can be a marketing and business strategy applied to increase customer engagement and loyalty (Dubois and Tamburrelli, 2013). Gamification can increase marketing effectiveness in consumer markets (Hofacker et al., 2016).

Deterding et al. (2011, p. 1) defined gamification as "the use of game design elements in non-game contexts" to design a gameful experience with the objective of creating a better customer experience and increasing engagement toward achieving specific goals. Deterding et al. (2011)'s definition adopted only a systemic perspective to games and support the designer's perspective (Huang et al., 2018). While Huotari and Hamari (2017, p. 25) focused on services and customer's perspective and defined gamification as "a process of enhancing a service with affordances for gameful experience in order to support user's overall value creation". Thus, Huotari and Hamari (2017) shifted gamification from a systemic perspective to an experiential view. While in a business context, gamification is the process of integrating game dynamics and game mechanics into a website, business service, online community or marketing campaign to drive participation and engagement". Thus, gamification has the potential to influence customers' engagement and encourage certain behaviors, supporting and motivating users to do tasks encouraged by services provided (Kuo and Chuang, 2016).

The most well-known frameworks in game design are called MDA framework that adapted from Hunicke et al. (2004) and stands for mechanics, dynamics, and aesthetics, which explains why game elements make people feel enjoyment. Game mechanics are functional components of a gamified application that include the goals, rules, settings, types of interactions and boundaries of the situation. These elements do not change from one user to another or over time such as points, levels, challenges, leaderboards, gifting and charity (Robson et al., 2016). Meanwhile, game dynamics, on the other hand, determine the reactions or the behavior of a user towards the game mechanics as a response to implement game mechanics. These interactions fulfill human desires, including the desire for reward, achievement, self-expression, altruism or competition. Additionally, dynamics includes both desired behaviors (e.g., cooperation among users, better contributions) and

unintended behaviors (e.g., cheating). Finally, game aesthetics refer to emotional or psychological responses from the user evoked during the interaction with a certain game. Depending on the game dynamics, different emotional responses from users can be expected, such as rising tension, excitement, frustration, or relaxation (Suh et al., 2015).

The main objective of gamification is to motivate people to engage in a gamified system, therefore understanding motivation is mandatory. Therefore, to create a gamification system that increases motivation it is necessary to focus on both extrinsic and intrinsic motivation (Lamprinou and Paraskeva, 2015). While the extrinsic motivation based on behaviorists theories, the intrinsic motivation based on motivation theories such as the Self Determination Theory (SDT). Kuo and Chuang (2016) examined the usage of game reward systems as a form of extrinsic motivation to motivate or change behaviors, as well as foster intrinsic motivation while giving extrinsic rewards. The usage of reward system in gamification design help to provide users with positive experiences, establish status, attract attention, and enable users to build social connections with others.

2. Website Features

2.1 Website Ease-of-Use

According to technology acceptance model (TAM) that indicates that the acceptance of any information system depends only on the influence of perceived usefulness and perceived ease-of-use on customer attitudes and intentions to adopt a particular information system, as well as perceived ease-of-use has a significant effect on perceived enjoyment (Nkoyi et al., 2019). According to Wakefield et al. (2011), this study defined ease-of-use as "the extent to which bank customers' adoption of gamified bank websites is perceived as easy or effortless". The ease-of-use of e-banking services allows greater movement of users from traditional forms of the banking system, hence reduces the long-term commitment of the customers and their loyalty (Rodrigues et al., 2014).

2.2 Webpage Characteristics

The characteristics and content of webpages are important factors influencing the online buying decision and keeping the interest of customers throughout the website (Ranganathan and Ganapathy, 2002). So that, it is important to study what the most features appreciated by customers of e-banking that apply to the content and webpage layout of the webpages of the banks (Walker, 2011), such as, identify what customers preferences about

the colors of the webpages, the type and format of the text, the graphics, the image quality, and the type of 2D or 3D images, the simplicity of the organization and the structure of webpages. Furthermore, the webpage usability is one of the most important factors to evaluate the quality of websites because it determines the ease of interaction with the content, the ease of finding and showing what is important, the speed of navigation, loading of pages and size of pages. Rodrigues et al. (2017) define webpages as "documents commonly written in Hypertext Markup Language (HTML) that are accessible through the Internet or another network, using a browser". Additionally, a webpage is usually characterized by text, graphics, and hyperlinks to other webpages and files. In the other hand, a website is "a central location that contains more than one webpage". For example, a bank website consists of thousands of different webpages, including information and transaction webpages.

2.3 Website Information

Website information content refers to the information on a web page or a website, including text, images, forms, and sounds. Information on a business website is important in order to give the customer a reason to revisit the website and check for offers, news, etc., and it leads to product purchase (Chen and Hitt, 2002). Additionally, according to Karuna et al., (2019), the quality of information can achieve customer trust, when contains list of dimensions as Reliable content: this means that there are no false statements and the information on the website is correct; Competence: means that the website has the resources and capabilities needed for the successful completion of the action and the continuance of the relationship; Usefulness: The extent to which the user is informed by and can use information; Proven expertise and authority: or a knowledgeable source of information is identified as one of the top trust markers; finally, Open and available cases or conversations: showing success stories for the user could improve users will to provide more personal information and increase trust. Therefore, Rodrigues et al. (2017) expected that the layout game design and mechanics help bank customers to obtain information and ask help to find more about bank offers. So, Avatars in a non-gaming context are a valuable aid to provide information about the products (Holzwarth et al., 2006). According to Walker (2011), this study defines information as "the contents on the website, including text, pictures, avatars, graphics, layout, sound, and motion, to help customers make good decisions".

2.4 Website Design

It is crucial for electronic businesses to design better websites with all essential services and information to gain trust among customers (Kidane and Sharma, 2016). An effective website must contain key characteristics in its appearance, content, and usability. A website must be visually appealing, elegant, and have a professional interface in order to correctly reflect the company, products, and services (Gao and Bai, 2014). The design of a website influences the performance and attitudes of clients who go online and should allow clients and visitors to browse without difficulty, and with efficiency, through all web pages and links. So that, the design should also influence the decision of clients and visitors to revisit the website (Tan et al., 2009). Interaction represents the way the customer navigates through the pages of the website with ease (Park and Kim, 2000). In this study, we examine how a gamified website design may influence bank customers experiences toward the websites. According to Tan et al. (2009), this study defines website design as "the process of conceptualizing, planning and creating a collection of electronic files that determine the layout, colors, text styles, structure, graphics, images, and use of interactive features of the webpages". The website design also involves architectural features, structural elements, contents (information), and a way of navigation that is easy to use.

Literatures Review

This section discusses number of studies that investigate the impact of gamification on website features as following:

Rodrigues et al. (2013) aims to investigate the acceptance of a gamified business application in e-banking based on the Technology Acceptance Model (that designed to explain computer usage behavior) that based on the Theory of Reasoned Action (designed to explain any human behavior virtually) that focuses on the perceived usefulness and perceived ease-of-use as main factors influencing the intention to accept a certain technology. Furthermore, the study examined the relationship between perceived socialness, perceived ease-of-use, perceived usefulness, perceived enjoyment, and intention to use a gamified e-banking mutual funds application. The results from an online survey of 183 customers showed that the gamified application had a positive impact on the acceptance of this new concept in e-banking. In addition, the findings showed that perceived ease-of-use had a strong positive influence on costumers' intentions and on the perceived usefulness. Further perceived usefulness and enjoyment had a positive influence on perceived ease-of-use. Rodrigues et al. (2013)

recommended that banks should develop business applications with game features in their websites, not only to increase the loyalty of customers, but also to engage the existing and potential customers to buy complex products in a different and simple way.

Rodrigues et al. (2014) aim to identify the web design elements and characteristics that affect the acceptance of use the banking websites with game elements. Thus, this study investigates the influence of gamification on website ease-of-use, website information, web pages characteristics, website design and on the intention to use an e-banking with game features through an online survey of 219 e-banking customers. The results show that the gamification had a positive impact on all variables; special it has a medium positive influence on web design and information and a large positive influence on customer intentions to use.

Rodrigues et al. (2016a) aim to answer the research question about how ease-of-use and enjoyment may influence the bank customers to use e-banking with the gamified business software. To answer this question, Rodrigues et al. (2016a) conducted two quantitative studies on customers using gamified business applications in e-banking context based on the Technology Acceptance Model. Study (A) in 2012 (N = 183), which investigated the perceptions of bank customers that use a gamified application to buy and sell mutual funds. And study (B) in 2015 (N = 219), which explored the perceptions of bank customers after using a buy and sell software for warrants. The study collected data through an online questionnaire. Additionally, online bank customers were invited to rate the importance of variables related to socialness, ease-of-use, usefulness, enjoyment, and intention to use e-banking systems with game features and social cues. The findings showed that ease-of-use and enjoyment have a positive influence on each other, but the influence of ease-of-use on enjoyment is stronger, than the reverse and both have influence in e-banking usage. These findings will contribute directly to explain of adoption hedonic business software in e-banking.

Additionally, Rodrigues et al. (2016b) focused on the importance of adoption social cues and gamification features by online bank customers because social features or socialness can be applied to e- banking to enhance the customers' perception through, for example, upload images, avatars, online product review, recommendation agents, instant help-avatar, social networks, blogs to share investment strategies, and other user-customization features. In the other hand, applying game design elements in e-business

software may provide several advantages. First, because games have rewarded mechanisms, such rewards may motivate customers to more frequently use the website and possibly increase their financial activity. Second, games may improve the customers' experience, learning process and enjoyment, facilitating the adoption of electronic channels. From a business perspective, gamification and socialness can be applied for reducing the face-to-face relationship and sustaining the development of electronic transactions that are directly performed by the customers. So, this study examines the causal relationship between seven variables: (gamification, socialness, ease-of-use, usefulness, enjoyment, intention to use, and business impact), in a gamified e-banking based on the Technology Acceptance Model to better understand the adoption of gamified business applications. The study tested this model using a sample of 183 bank customers. The results showed that gamification significantly improved the customer's sense of social interaction, which, in turn, strongly influenced the customer's intention to use the applications and subsequently impact on business. As a result, gamification is a very effective strategy for banks to use in order to motivate customers to increase their use of the website, thus increasing their financial activity.

Hsu et al. (2017) investigate the causal relationships among website features (i.e. utilitarian and hedonic features), customer experience, perceived value (i.e. information value, experiential value, social value, and transaction value), customer attitude, and behavioral intentions (i.e. intention to use and word-of-mouth intention) and the mediating effects of customer experience and attitude in the gamification website context of recycling and environmental friendliness. Particularly, this study conducted a structural equation model to test the causal relationships and the results showed that both utilitarian and hedonic website features have significant impact on customers' experience, which in turn affects their perception of value and attitude and in turn affect their behavioral intentions. Furthermore, the mediating effects of customer experience and attitude are confirmed in this study.

Rodrigues et al. (2017) examines the influence of gamification on website features and on the customers' intention to use in the context of e-banking. This study determined website features as ease-of-use, webpage characteristics, information and web design. This study tests hypotheses through developing a quantitative study involving 219 bank customers as participants who responded to an online questionnaire to measure their

reactions with a gamified e-banking website to manage their financial investments and their intentions to use the website. The findings indicate that gamification has a significant influence on the ease-of-use, webpage characteristics, information, and web design as well as the intention to use e-banking. Hsu and Chen (2018a) aim to explore the antecedents and consequences of customer experience and its mediating role in a gamified website context of resource recycling via recycle bank website. In particular, this study used structural equation modeling to test the causal relationships between variables through investigating the effects of both perceived mobility and website features (i.e. utilitarian features and hedonic features) on customer experience, which in turn affects perceived benefits (i.e. self-benefits and social benefits), types of perceived value (i.e. information value, experiential value, social value and transaction value) and brand equity (i.e. perceived quality, brand loyalty, brand associations and brand trust). The results showed that both perceived mobility and utilitarian and hedonic website features influence customer experience, which in turn affects perceived benefits, types of perceived value, and brand equity as well as the mediating effect of customer experience is also confirmed. Additionally, the application of gamification in practice is viewed as an important marketing tool for improving customer experience and participation in various activities.

Research Methodology

The target population will be all customers who have a bank account in a gamified e-banking system in Washington DC, United states of America. The study will use non-probability convenient sample because there is not a sampling frame. In order to test the hypotheses represented in the proposed conceptual model, the study will collect data from 384 participants through an online questionnaire. The current study uses SPSS v.26 to measure the Reliability and the validity of constructs. Additionally, the study tests hypotheses by using Partial Least Square Structural Equation Modeling through Smart PLS version 3.3.2.

Limitations and Future Research

The study was only applied in a gamified website in e-banking context. Therefore, future studies may expand the sample frame in different contexts such as e-shopping, e-learning, recycling, fashion, etc., to enhance validity of the research results. Second, the sample used in this study is biased towards the users of e-banking websites and have an online account

rather than non-users. Furthermore, the respondents of the questionnaire were selected from only the users of e-banking.

Conclusion and Implications

As shown above in this section, there is a contradictory between researchers about website features, where some researchers divided website features into hedonic and utilitarian features. While other researchers classified website features into ease-of-use, webpage characteristics, website information and web design. The current study will focus on website features in relate to ease-of-use, webpage characteristics, website information and web design in e-banking websites. The results of this study should help business managers enhance their understanding of customer's perceptions by using gamification as a crucial tool to improve website features. while website features have become popular in management, website managers need to have a comprehensive view of website design. The results of this study provide directions for website managers to evaluate customers' perception of website features. It is evident that successful design of website features enables a firm to generate positive customer experience, thereby simultaneously improving the perception of value, positive attitude, and desirable behavioral intentions. Applying gamification in the online business context has the potential to be an important vehicle to influence on customers to find out more about financial products, and fully adopt e-banking.

References

Aladwani, A.M. and Palvia, P.C., 2002. Developing and validating an instrument for measuring user-perceived web quality. *Information & management*, *39*(6), pp.467-476.

Alcivar, I. and Abad, A.G., 2016. Design and evaluation of a gamified system for ERP training. *Computers in Human Behavior*, *58*, pp.109-118.

Bista, S.K., Nepal, S., Paris, C. and Colineau, N., 2014. Gamification for online communities: A case study for delivering government services. *international Journal of Cooperative information Systems*, *23*(02), p.1441002.

Chen, P.Y. and Hitt, L.M., 2002. Measuring switching costs and the determinants of customer retention in Internet-enabled businesses: A study of the online brokerage industry. *Information systems research*, *13*(3), pp.255-274.

Cyr, D., 2008. Modeling web site design across cultures: relationships to trust, satisfaction, and e-loyalty. *Journal of Management Information Systems*, *24*(4), pp.47-72.

Deci, E.L. and Ryan, R.M., 1985. Conceptualizations of intrinsic motivation and self-determination. In *Intrinsic motivation and self-determination in human behavior* (pp. 11-40). Springer, Boston, MA.

Deterding, S., Sicart, M., Nacke, L., O'Hara, K. and Dixon, D., 2011, May. Gamification. Using game-design elements in non-gaming contexts. In *CHI'11 extended abstracts on human factors in computing systems* (pp. 2425-2428). ACM.

Dubois, D.J. and Tamburrelli, G., 2013, August. Understanding gamification mechanisms for software development. In *Proceedings of the 2013 9th Joint Meeting on Foundations of Software Engineering* (pp. 659-662).

Dymek, M. and Zackariasson, P. eds., 2016. *The business of gamification: a critical analysis*. Taylor & Francis.

Farzan, R. and Brusilovsky, P., 2011. Encouraging user participation in a course recommender system: An impact on user behavior. Computers in Human Behavior, 27(1), pp.276-284.

Friedrich, J., Becker, M., Kramer, F., Wirth, M. and Schneider, M., 2020. Incentive design and gamification for knowledge management. Journal of Business Research, 106, pp.341-352.

Gao, L. and Bai, X., 2014. Online consumer behaviour and its relationship to website atmospheric induced flow: Insights into online travel agencies

in China. *Journal of Retailing and Consumer Services*, *21*(4), pp.653-665.

Hofacker, C.F., De Ruyter, K., Lurie, N.H., Manchanda, P. and Donaldson, J., 2016. Gamification and mobile marketing effectiveness. Journal of Interactive Marketing, 34, pp.25-36.

Hamari, J. and Koivisto, J., 2015. "Working out for likes": An empirical study on social influence in exercise gamification. Computers in Human Behavior, 50, pp.333-347.

Hamari, J., 2017. Do badges increase user activity? A field experiment on the effects of gamification. *Computers in human behavior*, *71*, pp.469-478.

Hamari, J. and Koivisto, J., 2015. "Working out for likes": An empirical study on social influence in exercise gamification. Computers in Human Behavior, 50, pp.333-347.

Hassanein, K. and Head, M., 2007. Manipulating perceived social presence through the web interface and its impact on attitude towards online shopping. *International Journal of Human-Computer Studies*, *65*(8), pp.689-708.

Holzwarth, M., Janiszewski, C. and Neumann, M.M., 2006. The influence of avatars on online consumer shopping behavior. *Journal of marketing*, *70*(4), pp.19-36.

Hunicke, R., LeBlanc, M. and Zubek, R., 2004, July. MDA: A formal approach to game design and game research. In *Proceedings of the AAAI Workshop on Challenges in Game AI*(Vol. 4, No. 1, p. 1722).

Huotari, K. and Hamari, J., 2012, October. Defining gamification: a service marketing perspective. In *Proceeding of the 16th international academic MindTrek conference* (pp. 17-22). ACM.

Huotari, K. and Hamari, J., 2017. A definition for gamification: anchoring gamification in the service marketing literature. *Electronic Markets*, *27*(1), pp.21-31.

Hofacker, C.F., De Ruyter, K., Lurie, N.H., Manchanda, P. and Donaldson, J., 2016. Gamification and mobile marketing effectiveness. Journal of Interactive Marketing, 34, pp.25-36.

Hsu, C.L. and Chen, M.C., 2018. How does gamification improve user experience? An empirical investigation on the antecedences and consequences of user experience and its mediating role. Technological Forecasting and Social Change, 132, pp.118-129.

Hsu, C.L., Chen, Y.C., Yang, T.N. and Lin, W.K., 2017. Do website features matter in an online gamification context? Focusing on the mediating roles of user experience and attitude. Telematics and Informatics, 34(4), pp.196-205.

Huang, B., Hew, K.F. and Warning, P., 2018, January. Engaging Learners in a Flipped Information Science Course with Gamification: A Quasi-experimental Study. In *International Conference on Technology in Education* (pp. 130-141). Springer, Singapore.

Hwang, J. and Choi, L., 2020. Having fun while receiving rewards?: Exploration of gamification in loyalty programs for consumer loyalty. *Journal of Business Research*, *106*, pp.365-376.

Insley, V. and Nunan, D., 2014. Gamification and the online retail experience. *International Journal of Retail & Distribution Management*, *42*(5), pp.340-351.

Karuna, P., Purohit, H. and Motti, V., 2019. UTPO: User's Trust Profile Ontology-Modeling trust towards Online Health Information Sources. arXiv preprint arXiv:1901.01276.

Kuo, M.S. and Chuang, T.Y., 2016. How gamification motivates visits and engagement for online academic dissemination–An empirical study. *Computers in Human Behavior*, *55*, pp.16-27.

Lamprinou, D. and Paraskeva, F., 2015, November. Gamification design framework based on SDT for student motivation. In *2015 International Conference on Interactive Mobile Communication Technologies and Learning (IMCL)*(pp. 406-410). IEEE.

Lusardi, A. and Mitchell, O.S., 2014. The economic importance of financial literacy: Theory and evidence. Journal of economic literature, 52(1), pp.5-44.

Moslehpour, M., Pham, V., Wong, W.K. and Bilgiçli, İ., 2018. E-purchase intention of Taiwanese consumers: Sustainable mediation of perceived usefulness and perceived ease of use. *Sustainability*, *10*(1), p.234.

Nah, F.F.H. and Davis, S., 2002. HCI research issues in e-commerce. *Journal of Electronic Commerce Research*, *3*(3), pp.98-113.

Nkoyi, A., Tait, M. and van der Walt, F., 2019. Predicting the attitude towards electronic banking continued usage intentions among rural banking customers in South Africa. *SA Journal of Information Management*, *21*(1), p.8.

Park, J. and Kim, J., 2000. Contextual navigation aids for two World Wide Web systems. *International Journal of Human-Computer Interaction*, *12*(2), pp.193-217.

Ranganathan, C. and Ganapathy, S., 2002. Key dimensions of business-to-consumer web sites. *Information & Management*, *39*(6), pp.457-465.

Robbins, S.S. and Stylianou, A.C., 2003. Global corporate web sites: an empirical investigation of content and design. *Information & Management*, *40*(3), pp.205-212.

Robson, K., Plangger, K., Kietzmann, J.H., McCarthy, I. and Pitt, L., 2016. Game on: Engaging customers and employees through gamification. *Business horizons*, *59*(1), pp.29-36.

Rodrigues, L.F., Costa, C.J. and Oliveira, A., 2013, July. The adoption of gamification in e-banking. In Proceedings of the 2013 International Conference on Information Systems and Design of Communication (pp. 47-55). ACM.

Rodrigues, L.F., Costa, C.J. and Oliveira, A., 2014, May. How gamification can influence the web design and the customer to use the e-banking systems. In Proceedings of the International Conference on Information Systems and Design of Communication (pp. 35-44). ACM.

Rodrigues, L.F., Costa, C.J. and Oliveira, A., 2017. How does the web game design influence the behavior of e-banking users? Computers in Human Behavior, 74, pp.163-174.

Rodrigues, L.F., Oliveira, A. and Costa, C.J., 2016a. Does ease-of-use contribute to the perception of enjoyment? A case of gamification in e-banking. Computers in Human Behavior, 61, pp.114-126.

Rodrigues, L.F., Oliveira, A. and Costa, C.J., 2016b. Playing seriously–How gamification and social cues influence bank customers to use gamified e-business applications. Computers in Human Behavior, 63, pp.392-407.

Stieglitz, S., Lattemann, C., Robra-Bissantz, S., Zarnekow, R. and Brockmann, T., 2017. Gamification: Using Game Elements in Serious Contexts. Berlin: Springer.

Suh, A., Wagner, C. and Liu, L., 2015, January. The effects of game dynamics on user engagement in gamified systems. In *2015 48th Hawaii International Conference on System Sciences* (pp. 672-681). IEEE.

Tan, F.B., Tung, L.L. and Xu, Y., 2009. A STUDY OF WEB-DESIGNERS'CRITERIA FOR EFFECTIVE BUSINESS-TO-CONSUMER (B2C) WEBSITES USING THE REPERTORY GRID TECHNIQUE. *Journal of Electronic Commerce Research*, *10*(3).

Ul-Hameed, W., Shabbir, M., Imran, M., Raza, A. and Salman, R., 2019. Remedies of low performance among Pakistani e-logistic companies: The role of firm's IT capability and information communication technology (ICT). *Uncertain Supply Chain Management*, *7*(2), pp.369-380.

Vargo, S.L. and Lusch, R.F., 2004. Evolving to a new dominant logic for marketing. *Journal of marketing*, *68*(1), pp.1-17.

Vitkauskaitė, E. and Gatautis, R., 2018, January. Points for posts and badges to brand advocates: The role of gamification in consumer brand engagement. In *Proceedings of the 51st Hawaii International Conference on System Sciences*.

Wakefield, R.L., and Whitten, D. 2011. Mobile computing: A user study on hedonic/utilitarian mobile device usage. European Journal of Information Systems, 15(3). 292-300.

Walker, P.R., 2011. *How does website design in the e-banking sector affect customer attitudes and behaviour?* (Doctoral dissertation, University of Northumbria).

Wixom, B.H. and Todd, P.A., 2005. A theoretical integration of user satisfaction and technology acceptance. *Information systems research*, *16*(1), pp.85-10