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The Effect of Gamified E-learning on Employees' Engagement

A Case Study of a Lebanese Bank

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Abstract

Gamification is a concept that has not been analysed thoroughly for its positive outcomes or challenges. Although the effects of gamification in the field of education have been studied from numerous angles, gamified organisational learning features and the overall contribution of gamification have not been researched sufficiently. Following the implementation of a gamified E-learning platform, we conducted a case study in a Lebanese bank to measure the effects of gamified E-learning. The results showed that the adoption of gamified E-learning and employees' engagement levels were positively associated. Gamification also proved its importance in influencing employees' behaviour by creating a competitive environment and engaging employees on a knowledge-oriented platform. After the implementation, about 65% of employees declared higher levels of work engagement. Moreover, approximately 67% of employees acknowledged a higher degree of job satisfaction. This research paper also indicates the variables that can affect learners' – in this case, the bank employees' – perception of the gamified E-learning platform. Investigating the positive outcomes of implementing gamified processes in E-learning can pave the way for developing more complex gamified e-learning platforms.

Keywords

organisational commitment, organisational behaviour, gamification, organisational performance, e-learning, engagement

1 Introduction

1.1 Literature review of organisational learning

Organisational learning is a key element of both knowledge management and knowledge sharing within an organisational framework. In addition, workplace learning represents a strategic way to achieve higher competition levels and improved corporate potential in a competitive market. Organisational learning levels and employees' learning capabilities can determine organisational competitiveness (Chiva et al., 2007). The importance of the digital learning that is implemented and employees' learning capacity can also determine organisational competitiveness (Nda and Fard, 2013). Organisational learning is thus an element in improving organisational effectiveness and performance.

Applying corporate E-learning is an indication of how an organisation acquires, accumulates, and transfers organisational knowledge. Organisations must adapt to different contexts in a competitive market. The adaptation process must include the involvement of human and intellectual capital. Organisational learning and training are a necessary part of optimising organisational performance. An even better concept is influencing the learning environment in an institution by creating a highly competitive organisational atmosphere. The highly dynamic current economy has given institutions a high incentive to become learning organisations (Szarka et al., 2004). Organisational learning theories usually focus on knowledge sharing and knowledge conversion methods. Argote and Fahrenkopf (2016) focused on "learning by doing" theory and the efficiency of organisational tacit knowledge transfer. Designing a gamified electronic knowledge-sharing community within the organisation can also have significant knowledge-sharing benefits. Organisational e-learning can enhance critical thinking and influence problem-solving efficiency. The knowledge-sharing portal may include social features that can be used to promote knowledge sharing within the organisation and influence better cross-departmental communication.

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1.2 Gamified organisational learning processes

Organisational learning is essential to the optimisation of organisational production. Creating, retaining, and transferring knowledge are essential parts of organisational learning and an indication of the company's performance and level of competitiveness (Argote and Hora, 2017). Gamification is the term used to describe applying game mechanics to influence users' perception of a certain task or activity in a way that boosts their motivation while doing it. Gamification can be implemented in various organisational processes where it has been found to have positive attributes (Bozkurt and Durak, 2018). It gained public attention for its numerous applications that include productivity, finance, health, education, sustainability, as well as news and entertainment media (Deterding and Dixon, 2011; Tóth et al., 2019). Gamification is defined by the implementation of game-based elements such as mechanics, aesthetics, and game thinking in non-game contexts with the overall aim of engaging people, motivating action, enhancing learning and solving problems (Huynh et al., 2016; Zainuddin et al., 2020). Learning processes today need to follow the user's perception. A study conducted in 2016 proved the changing demographical indicators in digital gamers' ages (Brown, 2016). Brown elaborated that 58% of gamers were between 30 to 49. Employees' motivational triggers have also changed over time. Another more recent study conducted by Entertainment Software Association (2021) proved that demographically 38% of gamers are between 18 and 34, a finding which can be applied to the workforce as well. Gamification can also be implemented by applying the Fogg Behavioural Model: game elements can be implemented as triggers in the learning process. Gamification also has a significant role in building organisational practices by rewarding positive learning-oriented behaviour within an organisation.

1.3 Organisational learning and job satisfaction

In their research analysis, Erdem et al. (2014) clearly indicated how organisational learning and work fulfilment can be strongly associated. Furthermore, the authors demonstrated how the workplace environment directly influences employee performance and success in a positive manner. Employees taking part in organisational learning processes showed better workplace satisfaction. Including employees in E-learning content creation motivates them to function more efficiently and successfully to achieve their career objectives. Innovation-oriented organisations increase employees' satisfaction and promote innovation (Lund, 2003). Introducing organisational learning processes is a strategic tool that contributes to maintaining market competitiveness and building organisational success. The organisational learning approach may also be used in minimising decision-making time by easing knowledge transfer within the organisation. Organisational working culture can also influence higher job satisfaction levels. Knowledge-based companies that implement organisational learning practices have greater employee satisfaction levels than organisations that don't (Crossman and Abou-Zaki, 2003). Moreover, another study indicated that there is no statistically significant relationship between job income and organisational satisfaction (Gaertner, 1999). Workplace productivity and job satisfaction have a major impact on employees' engagement and teamwork potential. Interpersonal learning influences greater satisfaction levels (Rowden and Ahmad, 2000). Rowden and Ahmad's (2000) study demonstrated the positive effect of improved work capacity and task delegation on job satisfaction.

1.4 Organisational commitment

Employees' loyalty level in an organisational framework can be defined as organisational commitment. Higher commitment levels can influence and boost organisational performance. Organisational commitment is demonstrated by the emotional attachment between employees and their organisation as an entity. When employees become more emotionally attached to their organisations, they become more motivated to exert more effort to achieve their organisational goals effectively. Moreover, organisational commitment is considered a key element in achieving organisational success. In their study, Habib et al. (2014) indicated that organisations with low organisational commitment have higher employee turnover rates and lower organisational performance. Elaborating on their research findings more, we can conclude that administrative recruiting costs in the mentioned organisations are higher, and these are added to the previously accumulated training sunk costs. Highly committed employees demonstrate higher skill-building potential and a stronger desire for better performance. Building a committed workforce is considered an organisational investment. Committed employees are more willing to share their knowledge with their co-workers (Karkoulian et al., 2010).

1.5 Gamified E-learning

Gamification as a concept is still relatively new. There are several interpretations of gamification. One of the most widely agreed-upon interpretations is that gamification provides all the attractive and addictive features traditionally found in games and implement them in real life productive activities (Chou, 2015). The aim is to influence and motivate players to partake in a targeted behaviour or action. This influence will improve employees' commitment, which simultaneously enhances successful engagement in the desired behaviour. The Princess Sumaya University of Technology has performed a focused study to analyse the impact of gamified E-learning on students' performance. The study findings indicated positive relation between gamification and students' performance. Students engaged in the gamified platform achieved the highest grades among their peers (Issa and Jusoh, 2019). Moreover, Zaric et al. (2020) examined behavioural changes in an instructional sense but with a broader sample of 124 students. The research reflected the importance of gamification implementation in achieving higher engagement levels. E-learning in an organisational framework should focus on material design, instruction means and implementation forms. In addition, the authors discussed whether the mandatory function benefits or affects employees' engagement and performance in their organisational learning environment. Simple and diverse approaches to E-learning concentrate mostly on teamwork, corporate collaboration, and leadership skills. A positive relationship has been found between knowledge management, knowledge-sharing, and organisational commitment levels in previous research (Salleh et al., 2017). Gamification can also be implemented by creating competitive scenarios within the organisational process. The competitive scenarios are created using game design elements within the organisation which also improve employee's productivity levels. Reward and recognition take a more complex form with organisational gamification. Gamified processes increase employees' managerial recognition and elevate their status among their peers boosting their confidence and working outcomes. The theoretical analysis of gamification can be defined as a psychological tool designed to integrate and engage users on the E-learning platform.

2 Research questions

As previously mentioned in the literature review, learning in an organisational framework and knowledge-sharing processes have a direct positive effect on employees within the organisation. Employees' behaviours within an organisational framework covering areas such as working practices, interpersonal relations, corporate loyalties, innovation levels and leadership style all comprise elements of the organisational culture. Assuring a harmonious working community, better coordination and engagement between managers and their employees are fundamental to a productive organisational environment. Our study focuses on a comprehensive gamified E-learning platform designed for the banking sector. The mentioned platform is tailored primarily for financial practitioners addressing a broader and more specialised range of subjects, including anti-money laundering, quality control methods and digital finance. In addition, customer support tools were designed with the call centre's assistance, based on consumers' complaints. After implementing the gamified E-learning process, employees from different departments became interested in and enrolled in courses bearing little to no relation to their current job roles. The gamified E-learning platform was also a knowledge-sharing tool where employees were able to share their personal job-related experiences. Our literature review analysis outlined many scientific approaches towards e-learning and organisational learning, as well as their direct influence on employees' psychological state. Moreover, it showed how the organisational environment and organisational commitment stimulate better job performance and higher organisational performance. The literature review also indicated how knowledge sharing tools influence employees' job satisfaction levels. Our primary research goal is to elaborate on the influence of gamified E-learning on employees' engagement and job satisfaction in a Lebanese bank. We will also elaborate on how gamified e-learning can enhance employees' career path.

Our research hypotheses are:

- H1- A relationship between the use of E-learning for skill development and employees' workplace satisfaction levels can be detected.
- H2- There is a relationship between knowledge management through gamified E-learning and better job performance.
- H3- A relationship between gamified E-learning and work engagement can be detected.
- H4- A relationship between gamified E-learning and career path enhancement can be detected.

3 Research methodology

3.1 Participants and procedures

Quantitative and qualitative approaches are elaborated in this case study. The research investigates the responses of 66 employees in a Lebanese bank after the implementation of a gamified E-learning platform. 22% of the overall workforce of the bank are represented in this study. In-depth interviews were also conducted with the contact centre manager and a quality control board member to examine their viewpoints relating to the impact of gamified E-learning on the bank. They are referred to in our analysis as interviewees (A and B, respectively). Both managers were selected for their active participation in resolving internal disputes among employees, as well as their on-site awareness of the banks' human resources potential. The quantitative part of our data collection occurred in 2018 and 2021 for employees, while the interviews were performed in the second half of 2021. Our questionnaire (Appendix A) is based on a 5-point Likert scale, where responses ranged between 1 (Strongly Disagree) and 5 (Strongly Agree). Questionnaire statements include: "The knowledge I have gained through the banks' E-learning platform enables me to do my job better" and "Gamified e-Learning tools enhanced our team collaborations". The interviews encompassed questions such as "Did employees share knowledge and experiences with each-others through the E-learning Systems? If not, what factors were preventing them?" and "In your opinion, did the implementation of a gamified E-learning system enhance organisational engagement and minimise turnover rates?". Participation in the learning environment was not mandatory. Quantitively our sampling method was systematic and different tasks, positions, genders, and age groups were considered. The E-learning courses had gamified features that included progress bars and achievement badges. Department managers recommended two courses for their staff while staff members had the liberty to choose the three remaining courses. Employees assessed their courses and lecturers; in consequences the bank human resources department enhanced the E-learning platform accordingly. At the end of every course a case study analysis was performed on the platform. The case study answers were visible to all course participants which transformed the task to a brainstorming and knowledge sharing initiative. All respondents have participated in at least five courses on the gamified platform. This research focuses on employees' personal perception of the learning environment. The human resources department was also engaged by monitoring employees' performance in the mentioned courses and recognised employees' achievements and the knowledge they had gained in promotions and organisational transfers. Email reminders and certificates upon completion were sent to the bank's employees. The bank's strict policy prohibits sharing machine data. Data obtained were analysed by means of the SPSS tool to verify the research hypotheses.

3.2 Descriptive statistics

After distributing the questionnaire, data were collected from 66 employees in the targeted bank. We analysed the collected data (see Tables 1 and 2) using inferential statistics and descriptive statistics. Respondents are employees working in different positions in the selected bank. The survey was anonymous and was shared after the complete implementation of the gamified E-learning process. Employees were asked to participate voluntarily in the gamified process, with two electronic learning courses being suggested by their direct supervisor. Abstained employees did not face any negative retribution. During the implementation, several positive outcomes were clearly noticeable. Higher interdepartmental communication was clear. Overall, the banks' hierarchy supported departmental communication only and employees' interdepartmental interactions were limited to the banks' social events. The gamified E-learning platform presented an opportunity for employees to collaborate on mutual tasks. The tasks were course-based; however, they covered real-life scenarios and they were monitored by the department heads. Organisational routine problems were posted on the social section within the platform.

Table 1 Employees' gender and age distribution

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Male	30	45.5	45.5	45.5
Female	36	54.5	54.5	100.0
18–25	15	22.7	22.7	22.7
26–30	16	24.2	24.2	47.0
36 and above	17	25.8	25.8	100
Total	66	100.0	100.0	

Table 2 Years of employment

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
< a year	6	9.1	9.1	9.1
year to 5 years	20	30.3	30.3	39.4
6 years to 10 years	21	31.8	31.8	71.2
11 years to 15 years	10	15.2	15.2	86.4
16 years and above	9	13.6	13.6	100.0
Total	66	100.0	100.0	

Courses were diverse and covered tailored financial topics. They had an exact starting time and a recommended finishing time. The survey findings showed that 54.5% of the respondents were females, while 45.5% were males. 24.2% of respondents were between 26 and 30 years of age. The findings also indicated that 27.3% of the contributors were aged between 31 and 35. In the meantime, 15% of those interviewed were aged between 18 and 25. 25.8% of the interviewed employees were 36 years of age and above. The years of employment survey indicated that 13.6% of employees had 16 employment years or more. Employees with this level of experience are usually managers, especially in the banking sector. 15.2% reported that their years of employment were between 11 to 15 years; such respondents are usually the head of departments or assistant department heads. Approximately 62% of employees stated that their years of employment were between 1 and 10 years, indicating that they are employed in the marketing, IT, anti-money laundering, audit departments or in the call centre, and in the numerous bank branches. Just 9.1% of employees stated that they have less than a year of working experience. The survey also showed that 74.2% of respondents were familiar with and had previously used an online education platform. In comparison, only 25.7% of employees stated that their online education experience was limited to online banking forums and webinars. The study also examined the questionnaire findings regarding E-learning familiarity. The research specifically indicated that most bankers know the basics of electronic learning and have at least used it once in their lives. Employees in higher hierarchical positions using the online platform have declared a more profound familiarity with E-learning. Approximately 75% of the staff reported using their bank's gamified E-learning platform to develop their skills further. Only 4.5% of the employees disagreed with this notion, implying that they were using the gamified process for a different reason; this was probably peer pressure to use it. Another possible reason can also be the social feature that the gamified environment provided. The study showed that the gamified feature influenced higher competitiveness levels between employees participating in the courses. Employees' recognition demonstrated the intrinsic motivation that influenced higher engagement levels.

3.3 Quantitative research

4.5% of the respondents were males aged between 18 to 25, while 12% of our male respondents are between 26–30 years old. Approximately16% of our respondents are males between 31–35 years old. 12% of our respondents are males aged 36 and above. 18% of our respondents are females between 18–25 years old, 12% of our female respondents are between 26 and 30 years old, and 10.6% are between 31 and 35. Finally, 13.6% of our female respondents are age 36 and above. Our analysis indicated that in this case study, women are more engaged than men and they demonstrated a higher knowledge sharing tendency.

Data analysis indicates that about 71% of respondents between 18 and 30 believe E-learning enabled them to achieve workplace satisfaction. Approximately 9.6% of employees in the same age group disagreed with the mentioned statement, noting that 19% remained neutral in their responses. In addition, the aforementioned results indicate that this age group is more fulfilled in general in their workplace after implementing the gamified E-learning process. Analysing the data collected for the age group of 31 and above, we can conclude that approximately 63% of contributors who fall within this age range confirm that E-learning influences employees' organisational satisfaction, a statement opposed by 17% of employees within the same age group. Approximately 20% of employees described a neutral feeling regarding the statement. Collected data indicates that employees age groups influence employees' gamified e-learning perception dramatically. Comparing the two age groups, we can elaborate that although most employees reported improved job satisfaction levels after the successful implementation, 17% disagreed in the age group of 31 and above, while the same statement was opposed by less than 10% in the 18–30 age group. The mentioned statistics cannot take into consideration employees' familiarity with the process since 86.6% of employees have either used online courses or online digital learning materials before. Employees were also supported by the bank IT department, who tended to clear up any misperceptions and assisted staff in adapting to the process. One of the key elements in this questionnaire is the impact of the gamified E-learning process on employees' job satisfaction levels. Approximately 66% of the staff positively reported that E-learning has made them more satisfied with their routine working activities. About 20% were neutral, and approximately 14% stated that the application had no effect on their job satisfaction levels. These percentages clearly indicate a direct relation between gamified E-learning and employees' job satisfaction, which has been shown to positively impacts productivity levels. 85% of employees reacted positively to the usability of the app in the organisational environment. Only 4% of employees

viewed it negatively in terms of usability, while 10.6% were neutral. Data analysis clearly indicates that almost all new employees with less than one year of experience stated that e-learning enabled them to achieve organisational satisfaction. Employees with one to ten years of experience demonstrated a lower but good percentage at 65% satisfaction rates after the implementation of gamified E-learning, while 12% of employees with the same experience level opposed the statement. 63% of employees with 11 years of experience and above indicated higher satisfaction rates, while 21% of employees with the same level of experience opposed the statement. Satisfaction levels are higher after the successful implementation of gamified E-learning, yet objection levels are higher with older and more experienced employees. We conducted a Chi-Square analysis to validate our first hypothesis. Our results demonstrate a Pearson Chi-Square value of 63.470 and a significance level of 0.00 (< 0.05). Results are also presented in Appendix B Table B1. Our results reflect a significant positive relation between the implementation of the gamified E-learning platform, its usability for skill development and employees' satisfaction levels. We can confirm a positive relation between the variables of our first hypothesis. Creamer's V test (in Appendix B Table B2) is also implemented to measure the degree of association between the mentioned variables. Cramer's V test indicated a value of 0.490 signifying a relatively strong association between our research variables. The implementation of gamified E-learning has a relatively strong association with organisational satisfaction. Our first hypothesis is verified and proved by our research findings. Chi-Square analysis of gamified E-learning, knowledge management, and job betterment (in Appendix B Table B3) indicates a Pearson value 45.049 and a significate value of 0.00 (< 0.05). Results demonstrate a strong relationship between the implementation of the gamified E-learning platform, knowledge management and job betterment. Cramer's V coefficient 0.413 (in Appendix B Table B4) indicates a moderate to a relatively strong association between the hypothesis variables. According to our questionnaire analysis, employees were not only more satisfied in their workplace, but in addition, were performing their daily work in a better way by means of optimising their input which can be reflected on organisational productivity levels. That means our second hypothesis is also accepted, proven by our research finding. Chi-Square analysis of gamified E-learning, skill development, and employees' engagement presented in the Appendix B Tables B5 and B6 indicate a Pearson value of 54.204 and a significance value of 0.00 (< 0.05). Our results reflect significant positive relation between gamified E-learning, skill-developing usability, and employees' engagement. Moreover, the Cramer's V coefficient of 0.453 also highlight a relatively strong association between our research variables. Our research findings result verified our third hypothesis as well. Finally, we analysed the influence and effects of gamified E-learning on enhancing employees' career path. As we reconducted the Chi-square analysis, our results indicated a Pearson value of 60.220 and a significance value of 0.00 (< 0.05). Results are demonstrated in the Appendix B, Tables B7 and B8. Our analysis indicate first that our research variables are dependent. According to the Chi-square coefficient, a strong positive relation exists between gamified E-learning and career path enhancement. The Cramer's V coefficient of 0.453 indicates a moderate to a relatively strong association between the research variables.

3.4 Qualitative analysis

Both interviews were divided into 3 parts and comprised 10 open-ended questions. The questions focused on the overall evaluation of the application of the gamified E-learning platform.

The first section of the interview discussed the interviewees' experience with E-learning. The contact center manager, referred to by interviewee A, declared his substantial experience in E-learning, however, the quality control board member, referred to by interviewee B, indicated that this was his first experience with E-learning – particularly in an organisational context. Both managers reported difficulties in choosing the most adequate course for their employees. Furthermore, both interviewees advocated that managers and department leaders should be included in the course design process. The second part of the interview focused on knowledge sharing. Interviewee A's perception was that employees only collaborated on topics of shared interest which is clearly the case in customer service-oriented courses. Interviewee B believed that the electronic form of the courses improved interdepartmental knowledge sharing. Employees from different departments had the opportunity to collaborate and engage in productive organisational learning tasks together. The last section of the interview delved into the impact of the gamified E-learning platform. Both respondents agreed that the gamified platform had a positive effect on team cohesiveness and organisational engagement. Both respondents recognised higher productivity

rates: according to interviewee A, this increase was mostly attributable to the added organisational skills acquired; however, interviewee B stated that productivity improvements were strongly affected by improved organisational communication. Respondent A also noted a lower volume of employee complaints reaching the contact centre, based on which we inquired about staff turnover rates. Even though both emphasised the banks' stringent confidentiality policy, both respondents recognised a decreased staff turnover rate compared to prior years. As a concluding point, respondent A underlined the importance of learning systems in creating a virtual intellectual pool to which all employees may contribute and benefit from, whereas respondent B stressed the importance of competitive features and extrinsic incentives on the platforms' organisational effect.

4 Main findings

The research analyses the impact of gamified E-learning on 66 employees in a Lebanese bank. Various functions, positions, age ranges, as well as genders have been taken into consideration during the sampling process. The results showed a strong positive link between the successful application of the gamified E-learning process and employees' commitment in analysing the collected data. Accumulated E-learning activities and improved organisational communication has a positive effect on employees' productivity and on employees' potentials. This change improves overall employees' efficiency and will be an incentive opportunity for employees to achieve their career progress. Research findings have proved the research H0 hypothesis: there is a clear positive relation between the implementation of the gamified E-learning process and employees' commitment. The findings also indicated better interdepartmental communication. The results confirmed an important positive connection between knowledge sharing and employees' engagement. The research has also indicated that women have a greater inclination towards knowledge-sharing than men, which also increases simultaneously with their degree of organisational involvement. Enhancing knowledge encourages greater levels of engagement that can influence higher levels of organisational success. These transformations also encouraged the informal exchange of information between various departments and branches in highly advantageous gamified courses. The implemented leaderboards, performance graphs and courses customisation were extremely beneficial resources in the gamified environment which is in consistent with previous literature that highlighted the psychological effects of the mentioned game elements in influencing users' behaviour (Krath et al., 2021). Moreover, the gamified E-learning platform served as a communication platform between different departments by integrating different departments in joint virtual tasks. The gamified environment also boosted critical thinking and lowered problem-solving time. Finally, the results indicated that gamified E-learning influence can be different according to employee's perception. Employees' gamified E-learning perception is also affected by their demographical characteristics.

5 Limitations and practical consideration

Conducting this study, we faced several obstacles that can be summarised as follows. The sample addressed can be considered low. The study focused on a particular bank applying the gamified E-learning process. The bank is a Lebanese bank and has only 300 employees. The research addressed specific variables; considering all research variables can prove challenging. We also planned to gather information on turnover rates and organisational performance, which proved difficult due to the bank's policy.

6 Discussion and conclusion

In this research, we addressed the business application of gamification in electronic organisational learning. Our main research observations and empirical results may be summarised as follows. The E-learning platform was a participatory common effort, mainly between the human resources department and the bank staff. Employees participated in the assessment of the courses and reported their recommendations to the human resources department after every course completion. One of our noteworthy observations was a filed request to modify the curriculum of one of the courses to better match the practical context, since it was a rather academic course. Managers were also included as they proposed two of the five courses, which they perceived to be adequate for their employees' and departmental needs. Our quantitative data analysis indicated gamification's positive influence on employees' learning tendency. Gamification created a knowledge-oriented environment which boosted employees' potential as indicated by on-site practitioners. The competitive environment stimulated by the successful application of the gamified E-learning improved employees' motivation and organisational engagement. Dropout rates were only examined qualitatively due to the banks'

stringent confidentiality policy, with both of our interviewees reporting lower dropout rates. Another notable observation was one of the statements of interviewee A on a decreased volume of organisational complaints, which is another indication of improved organisational cohesiveness. Job satisfaction levels were also enhanced after the successful implementation as it was clearly indicated in our quantitative analysis. Research findings also proved that demographic characteristics could influence employees' perception of the gamified organisational E-learning platform. Employees' competitive behaviour was significantly influenced by gamification, which maintained their interest in the banks' E-learning platform. The gamified platform also performed as an organisational knowledge sharing tool, allowing members to communicate their progress and accomplishments, enhancing their organisational recognition.

References

Argote, L., Fahrenkopf, E. (2016) "Knowledge transfer in organizations: The roles of members, tasks, tools, and networks", Organizational Behavior and Human Decision Processes, 136, pp. 146–159. https://doi.org/10.1016/j.obhdp.2016.08.003

Argote, L., Hora, M. (2017) "Organizational Learning and Management of Technology", Production and Operations Management, 26(4), pp. 579–590. https://doi.org/10.1111/poms.12667

Bozkurt, A., Durak, G. (2018) "A Systematic Review of Gamification Research: In Pursuit of Homo Ludens", International Journal of Game-Based Learning, 8(3), pp. 15–33. https://doi.org/10.4018/IJGBL.2018070102

Brown, J. A. (2016) "Exploring the Next Generation of Older Gamers: Middle-Aged Gamers", In: Zhou, J., Salvendy, G. (eds.) Human Aspects of IT for the Aged Population. Healthy and Active Aging, Springer, pp. 308–318. ISBN 978-3-319-39948-5 https://doi.org/10.1007/978-3-319-39949-2_30

Chiva, R., Alegre, J., Lapiedra, R. (2007) "Measuring organisational learning capability among the workforce", International Journal of Manpower, 28(4), pp. 224–242. https://doi.org/10.1108/01437720710755227

Chou, Y.-K. (2015) "Actionable Gamification: Beyond Points, Badges and Leaderboards", CreateSpace Independent Publishing Platform, ISBN 1511744049

Crossman, A., Abou-Zaki, B. (2003) "Job Satisfaction and Employee Performance of Lebanese Banking Staff", Journal of Managerial Psychology, 18(4), pp. 368–76. https://doi.org/10.1108/02683940310473118

Deterding, S., Dixon, D., Khaled, R., Nacke, L. (2011) "From Game Design Elements to Gamefulness: Defining "Gamification"", In: MindTrek '11: Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments, Association for Computing Machinery, pp. 9–15. ISBN 978-1-4503-0816-8 https://doi.org/10.1145/2181037.2181040

Entertainment Software Association "2021 Essential Facts About the Video Game Industry", [pdf] Entertainment Software Association, Available at: https://www.theesa.com/wp-content/uploads/2021/08/2021-Essential-Facts-About-the-Video-Game-Industry-1.pdf [Accessed: 02 September 2021]

Erdem, M., İlğan, A., Ucar, H. İ. (2014) "Relationship between Learning Organization and Job Satisfaction of Primary School Teachers", International Online Journal of Educational Sciences, 6(1), pp. 8–20. https://doi.org/10.15345/iojes.2014.01.002

Gaertner, S. (1999) "Structural Determinants of Job Satisfaction and Organizational Commitment in Turnover Models", Human Resource Management Review, 9(4), pp. 479–493. https://doi.org/10.1016/S1053-4822(99)00030-3

Habib, S., Aslam, S., Hussain, A., Yasmeen, S., Ibrahim, M. (2014) "The impact of organizational culture on job satisfaction, employees' commitment and turnover intention", Advances in Economics and Business, 2(6), pp. 215–222. https://doi.org/10.13189/aeb.2014.020601

Huynh, D., Zuo, L., Iida, H. (2016) "Analyzing Gamification of "Duolingo" with Focus on Its Course Structure", In: Bottino, R., Jeuring, J., Veltkamp, R. (eds.) Games and Learning Alliance, Springer, pp. 268–277. ISBN 978-3-319-50181-9 https://doi.org/10.1007/978-3-319-50182-6_24

Issa, L., Jusoh, S. (2019) "Usability Evaluation on Gamified E-Learning Platforms", In: DATA '19: Proceedings of the Second International Conference on Data Science, E-Learning and Information Systems, Association for Computing Machinery, 11. ISBN 978-1-4503-7284-8 https://doi.org/10.1145/3368691.3368702

Karkoulian, S., Al Harake, N., Messarra, L. C. (2010) "Correlates of Organizational Commitment and Knowledge Sharing via Emotional Intelligence: An Empirical Investigation", The Business Review, 15(1), pp. 89–96. [online] Available at: https://www.researchgate.net/publication/265858186_Correlates_of_Organizational_Commitment_and_Knowledge_Sharing_via_Emotional_Intelligence_An_Empirical_Investigation/citations [Accessed: 18 August 2021]

Krath, J., Schürmann, L., von Korflesch, H. F. O. (2021) "Revealing the theoretical basis of gamification: A systematic review and analysis of theory in research on gamification, serious games and game-based learning", Computers in Human Behavior, 125, 106963. https://doi.org/10.1016/j.chb.2021.106963

Lund, D. B. (2003) "Organizational Culture and Job Satisfaction", Journal of Business & Industrial Marketing, 18(3), pp. 219–236. https://doi.org/10.1108/0885862031047313

Nda, M. M., Fard, R. Y. (2013) "The Impact of Employee Training and Development on Employee Productivity", Global Journal of Commerce & Management Perspective, 2(6), pp. 91–93. [online] Available at: https://www.researchgate.net/publication/260219097_The_Impact_Of_Employee_Training_And_Development_On_Employee_Productivity [Accessed: 20 August 2021]

Rowden, R., W., Ahmad, S. (2000) "The Relationship between Workplace Learning and Job Satisfaction in Small to Mid-Sized Businesses in Malaysia", Human Resource Development International, 3(3), pp. 307–322. https://doi.org/10.1080/13678860050128492

Salleh, S. M., Ismail, S. N., Hamzah, S. F. M., Zahari, A. S. M., Mohammed, N. H., Abdullah, N. (2017) "Knowledge Sharing and Organizational Commitment in Organization", Journal of Applied Environmental and Biological Sciences, 7(5S), pp. 37–40. [online] Available at: https://www.researchgate.net/publication/322758583_Knowledge_Sharing_and_Organizational_Commitment_in_Organization [Accessed: 02 September 2021]

Szarka, F. E., Grant, K. P., Flannery, W. T. (2004) "Achieving Organizational Learning through Team Competition", Engineering Management Journal, 16(1), pp. 21–32. https://doi.org/10.1080/10429247.2004.11415235

Tóth, Á., Lógó, P., Lógó, E. (2019) "The Effect of the Kahoot Quiz on the Student's Results in the Exam", Periodica Polytechnica Social and Management Sciences, 27(2), pp. 173–179. https://doi.org/10.3311/PPso.12464

Zainuddin, Z., Chu, S. K. W., Shujahat, M., Perera, C. J. (2020) "The impact of gamification on learning and instruction: A systematic review of empirical evidence", Educational Research Review, 30, 100326. https://doi.org/10.1016/j.edurev.2020.100326

Zaric, N., Vlatko, L., Ulrik, S. (2020) "A Fundamental Study for Gamification Design: Exploring Learning Tendencies' Effects", International Journal of Serious Games, 7(4), pp. 3–25. https://doi.org/10.17083/ijsg.v7i4.356

Appendix A

Table 1 Questionnaire

Question	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I have used online courses or online digital learning materials before	63.6%	22.7%	10.6%	3%	0%
The application was accessible and useful in an organizational atmosphere	42.4%	42.4%	10.6%	3%	1.5%
I was able to utilize the gamified e-learning platform to develop a new skill	30.3%	43.9%	19.7%	4.5%	1.5%
Gamified e-learning enabled me to be more satisfied at work	15.2%	51.5%	19.7%	10.6%	3%
Knowledge management is enhanced through the gamified E-learning process	27.3%	50%	12.1%	9.1%	1.5%
The knowledge I have gained through the Banks' gamified e-learning system enabled me to do my job better	25.8%	36.4%	21.2%	9.1%	7.6%
I became more engaged at work after the implementation of the gamified e-learning process	18.2%	47%	21.2%	7.6%	6.1%
Employees used the gamified e-Learning tools to enhance their career path	25.8%	40.9%	18.2%	12.1%	3%
Motivation is enhanced after the implementation of the gamified e-learning process	18.2%	40.9%	21.2%	15.2%	4.5%
Gamified e-Learning tools enhanced our team collaborations	15.2%	45.5%	18.2%	19.7%	1.5%
Supervisors support employees using E-Learning Systems	18.2%	50%	28.8%	7.6%	3%

Appendix B

Table B1 Gamified E-learning, skills development, and organizational satisfaction

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	63.470	16	0.000
Likelihood Ratio	39.653	16	0.001
Linear-by-Linear Association	20.619	1	0.000
N of Valid Cases	66		

Table B2 Cramer's V analysis – gamified E-learning, skills development, and organizational satisfaction

		Value	Approximate Significance
Nominal by Nominal	Phi	0.981	0.000
	Cramer's V	0.490	0.000
N of Valid Cases		66	

Table B3 Chi-Square analysis – gamified E-learning, knowledge management, and job betterment

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	45.049	16	0.000
Likelihood Ratio	37.793	16	0.002
Linear-by-Linear Association	27.044	1	0.000
N of Valid Cases	66		

Table B4 Cramer's V analysis – gamified E-learning, knowledge management, and job betterment

		Value	Approximate Significance
Nominal by Nominal	Phi	0.826	0.000
	Cramer's V	0.413	0.000
N of Valid Cases		66	

Table B5 Chi-Square analysis – gamified E-learning, skill development, and employees' engagement

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	54.204	16	0.000
Likelihood Ratio	38.335	16	0.001
Linear-by-Linear Association	14.093	1	0.000
N of Valid Cases	66		

Table B6 Cramer's V analysis – gamified E-learning, skill development, and employees' engagement

		Value	Approximate Significance
Nominal by Nominal	Phi	0.906	0.000
	Cramer's V	0.453	0.000
N of Valid Cases		66	

Table B7 Chi-Square – gamified E-learning and career path enhancement

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	60.220	16	0.000
Likelihood Ratio	32.945	16	0.008
Linear-by-Linear Association	16.008	1	0.000
N of Valid Cases	66		

Table B8 Phi and Cramer's V analysis gamified E-learning and career path enhancement

		Value	Approximate Significance
Nominal by Nominal	Phi	0.906	0.000
	Cramer's V	0.453	0.000
N of Valid Cases		66	