

The Relationship Between the Gamification Approach in Training Development and Job Performance in Service Sector

Alea Zaid¹, Shazaitul Azreen Rodzalan^{1*}

¹ Department of Management and Technology, Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia, Batu Pahat, Johor, 86400, MALAYSIA

*Corresponding Author: shazaitul@uthm.edu.my

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Abstract

The rapid advancement of technology has transformed how industries approach employee training and development. In Malaysia's service sector, which plays a crucial role in driving the nation's economy, traditional training methods often struggle to keep up with the growing need for efficiency, innovation, and precision. To address these challenges, gamification using game design elements in non-gaming settings has emerged as a promising way to make training more engaging and effective. Using a quantitative research approach, surveys were distributed to service-related businesses employees. The data collected was then analysed to assess how gamified training affects skill retention, productivity, and job satisfaction. The findings suggest that integrating gamification into training programs not only improves employee engagement but also leads to better learning outcomes and overall job performance. However, challenges such as implementation costs and adaptability were noted, indicating that while gamification has great potential, a well-planned approach is necessary for its success. This study provides practical recommendations for organisations looking to improve their training strategies by projecting the spotlight on the impact of gamified learning. The insights gained can help businesses create more effective training programs, boost workforce motivation, and maintain a competitive edge in Malaysia's growing service sector.

1. Introduction

The rapid evolution of technological advancements has ushered in new methodologies for enhancing employee training and development across various industries. In the service sector, where precision, efficiency, and continuous improvement are paramount, traditional training approaches are increasingly being complemented or replaced by innovative techniques. One such technique is gamification, which leverages game design elements in non-gaming contexts to enhance learner engagement and motivation.

This chapter explores the potential relationship between the gamification approach in training development and job performance within the service sector. The primary focus is on understanding how integrating gamification into training programs can impact employee productivity, skill retention, and overall job performance. By examining existing literature, theoretical frameworks, and case studies, this chapter aims to lay the groundwork for a comprehensive investigation into the effectiveness and practicality of gamified training solutions in the service environment. Key areas of exploration include the perceived benefits and challenges of

gamified training from employees' perspectives, the anticipated impact on job performance metrics, and the factors critical to the successful implementation of gamification in training programs. By addressing these aspects, this chapter seeks to provide a foundational understanding of gamification's potential advantages and limitations in enhancing job performance in the service sector, ultimately contributing to the broader discourse on innovative training methodologies in industrial contexts.

This study is motivated to be conducted due to increased demands for efficiency, productivity, and creativity, which have resulted in a decline in work performance. Many companies are finding it challenging to improve employee job performance and work satisfaction in order to achieve organisational success (Ramli, 2022). In Malaysia's service sector, the recent shift back to normal working hours and the adoption of flexible working arrangements have revealed a significant issue, which is employee burnout. Characterized by physical and emotional exhaustion, burnout leads to a loss of personal identity and a diminished sense of accomplishment. This condition is not only a personal struggle for employees but also has profound implications for job performance. The 2022 Employee Wellness Report by Employment Hero reveals that 58% of Malaysian employees experience burnout due to work (New Straits Time, 2023). Factors contributing to this burnout include increasing workloads, lack of clarity in job roles, unfair treatment, poor communication, inadequate time management, and various compounding workplace issues. Burnout results in poor mental health, anxiety, and depression, which, in turn, negatively impact job performance, leading to lower productivity, higher absenteeism, and decreased employee engagement.

In the service sector, this is particularly problematic as the industry heavily relies on consistent and efficient performance to meet production goals and maintain competitiveness. The decline in job performance due to burnout has been exacerbated by the pandemic, which saw a 17.3% drop in labour productivity by value added per employment in the second quarter of 2020 (Malaymail, 2020). This decline underscores the urgent need for effective interventions to enhance job performance and address employee burnout.

It's hard to keep up a consistent level of work performance. Employees experience natural peaks and troughs in their output because they are human (Perkbox, 2020). Working habits were altered by the contemporary period of commercialisation and competitiveness. An increase in industry competition has significantly changed the competitive global environment, resulting in several challenges and disputes (Turanligil, 2019). Due to these dynamics, organisations and employees are under more pressure than ever before, making adaptive methods necessary to handle performance unpredictability and maintain a competitive edge in the changing marketplace. In order to effectively address these difficulties, a multidimensional strategy that considers the demands of a global competitive market and the human aspect of work is needed.

In the Malaysian context, companies are still lacking or underutilising this gamification, and until today, most companies' top management is still struggling (Abdul Basit, 2021). Several Malaysian industrial companies have been reporting losses in their operations, with services companies experiencing significant declines in overall performance. Service in Malaysia has advantages, but it also has drawbacks. One of them is that high manpower-intensive industries rely on foreign worker manpower supply agencies in Malaysia for staff recruitment (Andaraya, 2025). This study explores the perceptions of employees and managers in the service sector regarding the effectiveness of gamified training programs and examines their impact on job performance. It also investigates the relationship between the gamification approach in training and overall job performance levels in the service sector.

This research examines the relationship between the gamification approach in training development and job performance within the service sector. The scope includes an in-depth analysis of various gamification components, their integration into training programs, and their subsequent effects on worker engagement, knowledge retention, and job performance. This study will be conducted within the service sector in Malaysia, with a specific focus on companies located in the Klang Valley. The Klang Valley serves as a central business hub, hosting the headquarters of numerous global and regional companies. This region's prominence makes it an ideal setting for examining the potential benefits and challenges of implementing gamified training in the service sector.

2. Literature Review

2.1 Job Performance

Job performance is a multifaceted concept that encompasses various dimensions of an employee's work behaviour and outcomes, significantly impacting organisational success. In the service sector, job performance is particularly critical due to the industry's reliance on efficiency, precision, and productivity. Key aspects of job performance include productivity, quality of work, efficiency, reliability, problem-solving abilities, teamwork, adaptability, and compliance with safety standards.

Productivity refers to the quantity of work an employee produces within a given timeframe, which is essential for meeting production targets. High productivity indicates effective use of time and resources to maximise output (Harter, Schmidt, & Hayes, 2002). Quality of work, which involves the accuracy and standard of output, is crucial

for maintaining customer satisfaction and reducing waste (Goetsch & Davis, 2014). Efficiency, defined as achieving maximum productivity with the least wasted effort or expense, plays a significant role in optimising workflows and minimising costs (Schermerhorn, 2019).

Job performance refers to the effectiveness with which individuals fulfil their job responsibilities within organisational settings, encompassing both the quality and quantity of their work outputs and their contributions to achieving organisational objectives (Borman & Motowidlo, 2016; Motowidlo *et al.*, 2017). Task performance focuses on the core duties and technical competencies required for a specific role, including productivity, job-specific skills, and goal attainment (Motowidlo *et al.*, 2017). Contextual performance, also referred to as organisational citizenship behaviour, extends beyond formal job requirements to encompass behaviours that contribute positively to the work environment, such as helping coworkers, volunteering for additional tasks, and promoting organisational values (Motowidlo *et al.*, 2017). Assessing job performance involves various methods tailored to organisational needs and job roles. Common assessment techniques include supervisor evaluations, peer reviews, self-assessments, and objective performance metrics (Murphy & Cleveland, 2020). These methods aim to comprehensively understand employee contributions and effectiveness in fulfilling job requirements and organisational expectations.

The study of job performance is underpinned by various theoretical frameworks. For instance, the job characteristics model by Hackman and Oldham (1976) emphasizes the impact of job design factors, such as skill variety, task identity, autonomy, and feedback, on employee motivation and performance outcomes. This model posits that well-designed jobs can enhance intrinsic motivation and job satisfaction, leading to improved performance and organisational outcomes. Understanding job performance is essential for organisational decision-making processes, including recruitment, selection, performance appraisal, training and development, and career advancement strategies (Schmidt & Hunter, 2018). Effective performance management practices enable organisations to identify high-performing employees, provide constructive feedback, allocate rewards and recognition, and implement targeted interventions to enhance performance and productivity.

In summary, job performance encompasses both task-related achievements and contextual behaviours that contribute to organisational effectiveness. By assessing and understanding job performance through various lenses and methodologies, organisations can optimise employee contributions, foster a positive work environment, and achieve strategic goals.

2.2 Theory of Job Performance

To optimize service sector operations and efficiency, various interdisciplinary approaches are applied, drawing from fields such as management science, behavioural psychology, and information technology (Kalpakjian, 2020). In order to increase service consistency and precision, the theory also incorporates technological improvements like automation and digitalisation.

Several theories underpin the concept of job performance in training development. The Self-Determination Theory (SDT) posits that gamification can satisfy basic psychological needs for autonomy, competence, and relatedness, leading to increased motivation and engagement (Ryan & Deci, 2000). Self-Determination Theory (SDT), developed by Deci and Ryan, offers a comprehensive framework for understanding human motivation and behaviour, particularly in organisational contexts. At its core, SDT emphasizes three fundamental psychological needs that drive intrinsic motivation. Autonomy refers to the need to feel in control of one's actions and decisions, which is crucial in job performance as it allows employees to choose how tasks are approached and completed. When individuals perceive their work environment as supportive of autonomy, they are more likely to feel motivated and engaged (Ryan & Deci, 2000). Competence involves the need to feel effective and capable in one's interactions with the environment. In the workplace, competence manifests as the ability to execute tasks and achieve desired outcomes successfully. When employees perceive their efforts as contributing to meaningful results and see improvement in their skills, their motivation and performance tend to increase (Ryan & Deci, 2000). Relatedness pertains to the need to feel connected to others and experience a sense of belonging within social contexts. In organisational settings, fostering relatedness through supportive relationships with colleagues and supervisors enhances employee motivation and job satisfaction (Ryan & Deci, 2000).

SDT suggests that environments supporting these basic psychological needs can promote intrinsic motivation, where individuals engage in tasks for their inherent satisfaction rather than external rewards (Deci & Ryan, 2000). This theory has been widely applied across various domains, including education, healthcare, and organisational behaviour, to enhance motivation and performance. In the context of gamification, SDT provides insights into how game elements can be designed to support autonomy, competence, and relatedness.

2.3 Past Studies of Job Performance

Job performance has been a significant area of study in organisational behaviour, with recent research continuing to explore its determinants, outcomes, and influencing factors. One prominent study by Koopmans *et al.* (2014) provides a comprehensive review and framework for understanding job performance. They categorise job

performance into four main dimensions: task performance, contextual performance, adaptive performance, and counterproductive work behaviour. This framework highlights the multifaceted nature of job performance and the need to consider various aspects beyond mere task execution.

A study by Christian, Garza, and Slaughter (2011) emphasizes the role of work engagement in job performance. Their meta-analysis found that work engagement, characterised by vigour, dedication, and absorption, is a strong predictor of both task and contextual performance. This underscores the importance of fostering an engaged workforce to enhance overall job performance.

Recent research by Kim, Shin, and Swanger (2019) explores the impact of job resources on job performance through the lens of the Job Demands-Resources (JD-R) model. They found that job resources such as autonomy, feedback, and social support positively influence job performance by enhancing work engagement. This study supports the notion that providing employees with adequate resources can mitigate the negative effects of job demands and improve performance outcomes.

Another relevant study by Parke, Weinhardt, Brodsky, Tangirala, and DeVoe (2018) investigates the role of psychological safety in team performance. Their findings indicate that teams with high psychological safety, where members feel safe to take risks and express their thoughts, tend to perform better. This highlights the importance of creating a supportive work environment to foster high-performing teams.

The relationship between job satisfaction and job performance has also been confirmed in recent studies. For instance, a meta-analysis by Harrison, Newman, and Roth (2006) confirms that job satisfaction is a significant predictor of job performance. This relationship is further supported by a study by Lu, Gursoy, and Neale (2016), which found that satisfied employees are more likely to exhibit higher levels of performance, indicating that job satisfaction remains a crucial determinant of job performance.

Furthermore, recent research has explored the impact of intrinsic and extrinsic motivation on job performance. A study by Gagné and Deci (2005) highlights the importance of intrinsic motivation, which arises from genuine interest and enjoyment in the work itself, in enhancing job performance. They argue that while extrinsic rewards can motivate employees, intrinsic motivation is more sustainable and leads to higher-quality performance.

2.4 Gamification Approach in Training Development

Gamification involves the application of game design elements in non-game contexts to enhance user engagement, motivation, and overall experience. This innovative approach has gained significant traction in various fields, including education, marketing, health, and organisational training, due to its effectiveness in driving behavioural change and improving outcomes (Deterding *et al.*, 2011). In the context of organisational training and development, gamification leverages elements such as points, badges, leaderboards, challenges, and rewards to create a more engaging and motivating learning environment.

The primary goal of gamification is to increase intrinsic motivation by tapping into fundamental human desires for achievement, competition, and social interaction (Deci & Ryan, 2000). By incorporating these game-like features into training programs, organisations can foster a more dynamic and interactive learning experience, which can lead to better retention of information and skills application (Hamari, Koivisto, & Sarsa, 2014). For example, leaderboards can encourage healthy competition among employees, while badges and points can provide immediate feedback and recognition for accomplishments, enhancing employees' sense of achievement and progress (Sailer *et al.*, 2017).

Moreover, gamification can address some of the common challenges associated with traditional training methods, such as low engagement and motivation. By making learning activities more enjoyable and rewarding, gamified training programs can significantly improve employee participation and enthusiasm (Seaborn & Fels, 2015). This is particularly important in the manufacturing sector, where the adoption of new skills and adherence to safety protocols are critical for maintaining productivity and operational efficiency. Recent studies have demonstrated the positive impact of gamification on various organisational outcomes. For instance, a meta-analysis by Sailer *et al.* (2017) found that gamification positively influences learning outcomes, motivation, and engagement. Another study by Koivisto and Hamari (2019) highlighted the role of social interaction in gamification, noting that features promoting collaboration and competition among users can enhance the overall effectiveness of gamified systems.

Gamification involves the strategic application of game design principles and elements within non-game contexts to enhance user engagement, motivation, and interaction (Barney, 2023). This approach integrates entertaining and immersive gaming features into everyday tasks or educational activities. By implementing a closed loop of trigger-action-feedback, gamification transforms routine-based processes into dynamic and enjoyable experiences, aiming to boost adoption rates, encourage active participation, and increase overall success metrics. The essence of gamification lies in its ability to leverage game mechanics and design metaphors to make tasks more compelling and rewarding (Oxford, 2019). It integrates elements such as progression systems (e.g., levels and challenges), social interactions (e.g., collaboration and competition), and feedback mechanisms

(e.g., immediate feedback and performance metrics) to simulate the engaging qualities of games in traditionally less playful settings.

Moreover, gamification serves as an instructional strategy in education and workplace training, where it enhances learning retention and skill development by making content more interactive and memorable (ProctorEdu, 2024). By embedding game-like features into educational modules or professional development programs, gamification promotes deeper engagement and encourages learners to pursue learning objectives actively. Basically, gamification is a comprehensive approach that applies game dynamics and psychology to non-game scenarios, aiming to transform user experiences, drive behavioural change, and achieve desired outcomes through enhanced engagement and motivation (Gartner, 2024).

2.5 Theory of Gamification

Gamification theory also integrates elements from cognitive psychology, focusing on how game elements can enhance learning, retention, and problem-solving skills. Flow Theory, introduced by Mihaly Csikszentmihalyi, explores the psychological state of flow where individuals experience deep immersion and engagement in an activity, characterised by intense focus, enjoyment, and a sense of timelessness (Csikszentmihalyi, 1990). This state arises when the challenges of a task are well-matched with an individual's perceived skills, creating a feeling of effortless involvement and optimal performance. Key components of flow include clear goals that provide direction, immediate feedback that helps individuals adjust their actions, and a balance between the challenge level and the individual's abilities (Nakamura & Csikszentmihalyi, 2002). In gamification, these principles are applied through game elements, which provide clear objectives and feedback, and adjust challenges to match user skills, enhancing engagement and motivation (Csikszentmihalyi, 1990). Furthermore, the concept of flow involves a merging of action and awareness, where individuals become fully absorbed in the task at hand, often losing self-consciousness and experiencing a heightened sense of enjoyment and intrinsic motivation (Nakamura & Csikszentmihalyi, 2002). By designing gamified systems that facilitate flow experiences, organisations can promote deep concentration, maximize learning outcomes, and improve job satisfaction among employees.

The theory of gamification is grounded in leveraging game mechanics and principles to influence behaviour, enhance engagement, and motivate individuals in non-game contexts (Rigby, 2015). It draws from psychological theories such as self-determination theory (SDT), which emphasizes the importance of autonomy, competence, and relatedness in fostering intrinsic motivation (Legault, 2017). Gamification aims to satisfy these psychological needs, thereby increasing user motivation and engagement. Additionally, it utilises behaviourist principles, such as operant conditioning, where rewards and feedback reinforce desired behaviours.

2.6 Past Studies of Gamification

Gamification is made up of several critical components that work together to provide interesting and stimulating experiences (Wood, 2013). Game mechanics, or the rules and feedback loops that direct user interactions challenges are essential to gamification. These mechanics impact how users engage with and see the gamified experience by generating dynamics, which are the more general features that result from its use, such as rivalry, cooperation, and advancement. Through graphics, stories, and thematic components, aesthetics, which include both visual and narrative elements, make the gamified system engaging and immersive (Wood, 2013). Furthermore, in order to satisfy users' intrinsic and extrinsic motivational demands, motivational affordances are engineered to include incentives, accomplishments, and feedback mechanisms that promote engagement and contentment.

Gamification also refers to the application of game-design elements and principles in non-game contexts to engage and motivate people to achieve their goals. By incorporating elements such as point scoring, leader boards, badges, and competition, gamification seeks to make mundane or challenging tasks more enjoyable and rewarding. For instance, in educational settings, gamification can enhance learning by turning assignments into quests, awarding students for completing tasks, and fostering a sense of accomplishment. Similarly, in the workplace, gamification can boost productivity and employee engagement by introducing performance-based rewards and friendly competition. The key to successful gamification lies in understanding what drives and motivates the target audience, ensuring that the game elements align with the overall objectives and creating a seamless and enjoyable experience that encourages continued participation and commitment.

2.7 Relationship between Gamification Approach in Training Development and Job Performances in the Service Sector

The relationship between gamification and the service sector is increasingly significant as businesses seek innovative ways to enhance productivity, employee engagement, and operational efficiency. In service, gamification can be applied to training, performance management, and process optimisation. Gamified training programs make learning new skills and safety protocols more engaging, leading to better information retention

and compliance (Koivisto, 2019). Performance management benefits from game mechanics like points and leaderboards, motivating employees to improve productivity and adhere to best practices.

Additionally, gamification provides real-time feedback and incentives for meeting production targets and maintaining quality standards, streamlining processes, and fostering collaboration among workers (Landers, 2015). Overall, integrating gamification into service can lead to improved operational outcomes, increased employee satisfaction, and a more innovative workplace culture.

3. Research Methodology

This research aims to investigate the impact of gamification in training development on job performance in the service sector, focusing on identifying the most effective gamification elements and examining the mediating roles of employee engagement and motivation. This study adopts a quantitative method to gain a comprehensive understanding of the impact of gamification on training and job performance. The quantitative component will involve a survey to collect numerical data. Despite limitations like potential response bias and variability in gamification implementation, the study aims to provide valuable insights into the effectiveness of gamified training in enhancing job performance, contributing both to academic literature and practical applications in the service industry. The research process is shown in Fig 1.

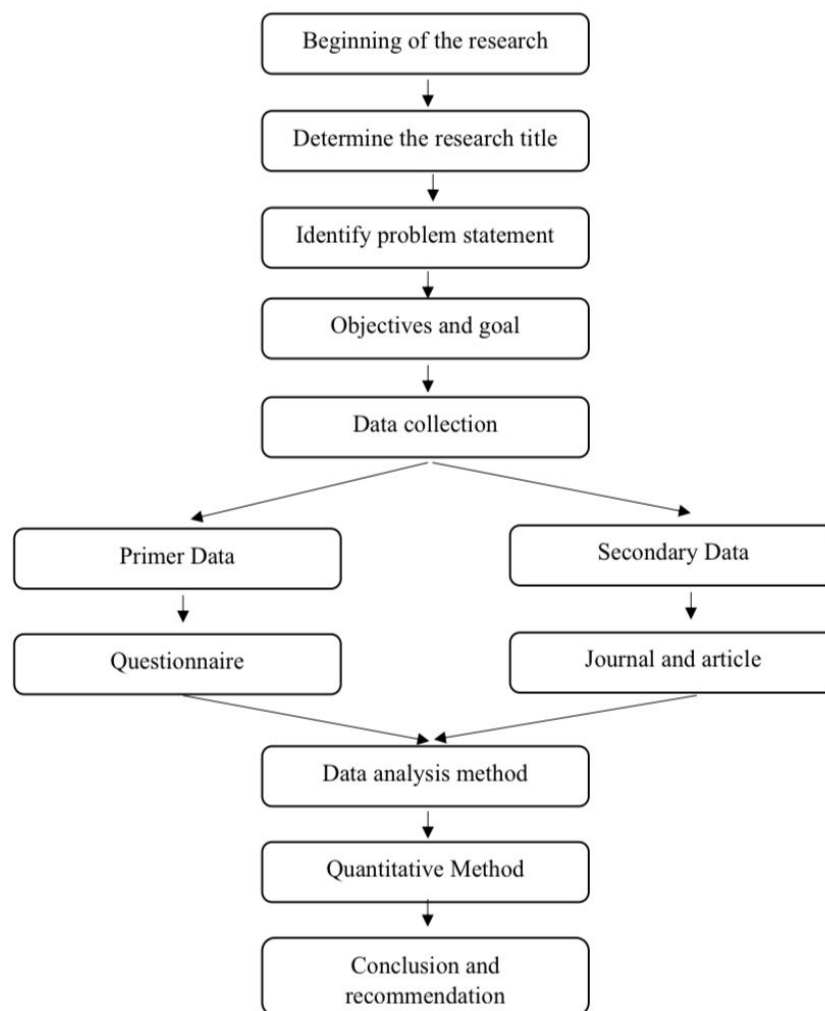


Fig. 1 Flow chart of this study

3.1 Population

A population is a group of institutions, individuals, objects and others that have general characteristics that are important to a researcher (Shukla, 2020). A selection of the total number to this subject should be obtainable, manageable, or accessible population and can also be generalised and not limited to the sample (Shukla, 2020). The population for this study encompasses employees within the service sector in Malaysia who are engaged in training and development programs. Malaysia's service sector is a significant contributor to the country's economy, making it a relevant focus for understanding the impact of gamification on training development and

job performance. Some of the population characteristics will be considered such as gender, age, race and working experience.

Krejcie and Morgan's (1970) table, shown in Table 1, is commonly used to determine sample size for a given population size with a specified confidence level (usually 95%) and margin of error. Below is a population table derived from their sample size formula.

Table 1 *Determining sample size method Krejcie and Morgan (1970)*

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3200	346
85	70	440	205	4000	351
90	73	460	210	4300	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

Given that there are 194,574 employees in the service sector in Malaysia, we can use Krejcie & Morgan's (1970) sample size table to determine the appropriate sample size. For a population of 194,574, the table suggests a sample size of approximately 338. This ensures a statistically significant representation with a 95% confidence level and a 5% margin of error.

3.2 Research Instrument

This study employed questionnaires as the primary method for data collection. As explained by Sathiyaseelan (2015), research instruments serve as tools that enable researchers to obtain the necessary data. These tools can differ based on their format, purpose, characteristics, or accessibility. The quality of an instrument is determined by its reliability and effectiveness. Meanwhile, Roopa and Rani (2016) define a questionnaire as a document containing a series of questions, prepared for respondents to share their views or feedback.

The questionnaire serves as a tool comprising a series of questions aimed at gathering information from respondents. The data obtained through the questionnaire were utilised to determine the factors influencing job performance within the service sector. The questionnaire was divided into three sections: Part A, Part B, and Part C. Part A addressed the demographic details of the respondents, Part B concentrated on the gamification approach in training development, and Part C focused on job performance within the service sector.

A structured research instrument utilising quantitative methods will be employed to investigate the relationship between gamification in training and job performance in the service sector. Participants will first receive an introduction outlining the study's objectives and the assurance of confidentiality. Then, they need to complete a survey questionnaire designed to gather quantitative data across several key areas.

The survey begins with a section assessing participants' perceptions and familiarity with gamification within training programs. Likert scale items will measure their awareness of gamification concepts and past experiences with gamified learning methods, aiming to establish a baseline understanding of their attitudes towards gamification's effectiveness in enhancing learning and engagement.

3.3 Data Collection

The process of gathering information about a topic from any relevant source in order to address the research problem, test the hypothesis, and determine the results is known as data collection. Data collection is one of the steps that must be completed in order to conduct any kind of research (Torabi, 2015). Data collection can be divided into two categories which are primary data collection and secondary data collection (Taherdoost, 2022). Primary data are those gathered from first-hand experience (Kabir, 2016). The original, more trustworthy and accurate. In order to get more information, the researcher has consulted primary sources, such as distributing questionnaires to the employee in Kuala Lumpur and Selangor.

3.4 Pilot Study

Before the full-scale study, a pilot study is a preliminary inquiry carried out to improve the research tools and protocols. Its objectives are to spot possible problems, verify the accuracy of the interview and survey questions, and guarantee the dependability and precision of the data gathering techniques. Table 2 shows the correlation coefficient values.

Table 2 *Correlation coefficient*

Alpha Coefficient Range	Strength of Association
<0.6	Poor
0.6 to < 0.7	Moderate
0.7 to < 0.8	Good
0.8 to < 0.9	Very Good
0.9	Excellent

3.5 Data Analysis

The purpose of the data analysis is to ascertain whether or not the research study's goals can be met. In order to ascertain the investigation's conclusions and whether the study will meet its goals, data analysis will be used. As a result, all data will be gathered from the primary source, a questionnaire, and will be subjected to methods of descriptive and correlation analysis for analysis. Therefore, the IBM Statistical Package for Social Sciences (SPSS) software version 26 will be used to analyse the data for this study. The software provides a variety of methods to check data and test scientific data rapidly. Therefore, researchers can clarify this study using percentage and average values based on the results and data.

The Statistical Package for Social Sciences (SPSS) Version 26 was used to analyse the survey data for this study. Advanced statistical analysis, a large library of machine learning algorithms, text analysis, open-source extensibility, big data integration, and simple application integration are all features of the SPSS software platform. SPSS is accessible to users of all skill levels because to its ease of use, versatility, and scalability.

Reliability analysis is crucial to ensure the consistency and dependability of the research findings. In this study, reliability is assessed using Cronbach's Alpha, a measure of internal consistency that indicates how well the items in a survey or test measure the same construct. A Cronbach's Alpha value of 0.70 or higher is considered acceptable, indicating that the survey items are reliably measuring the underlying concept of interest. Pilot testing of the survey instruments is also conducted to identify and address any ambiguities or inconsistencies in the questions, thereby enhancing the overall reliability of the data collection tools. Additionally, test-retest reliability is employed to determine the stability of responses over time. This involves administering the same survey to the same group of respondents at two different points in time and comparing the results. High correlation between the two sets of responses indicates good test-retest reliability, ensuring that the findings are not influenced by temporal factors or random errors.

4. Results and Discussion

4.1 Response Rate

The respondents of this study were focused on food and beverage service workers in Klang Valley. The population for the worker was 194,574, which means the sample size based on Krejcie and Morgan (1970) is 384. The response rate is 98%, which means more than 384 workers answered all questionnaires. Table 3 below shows the response rate from the questionnaires collected.

Table 3 Survey return rate

Population	Sample Size	Questionnaire Distribute	Questionnaire Returned	Percentage
194,574	384	420	412	98%

4.2 Reliability Test

Reliability refers to the degree to which a variable measurement produces the same results and measurements when repeated under similar conditions (Karnia, 2024). A research study's reliability is determined by its consistency, precision, repeatability, and trustworthiness, which indicate that it is free of bias. To analyse the data collected from the questionnaire, the researcher used a reliability test. Cronbach's alpha (α) is the most widely used measure to evaluate reliability.

4.3 Pilot Study

A total of 30 questionnaires were randomly distributed to the study sample for pilot testing purposes. The data from the questionnaires were analysed using SPSS software. Table 5 below shows Cronbach's Alpha values for the study pilot that has been carried out for this research. There are two variables: an independent variable and a dependent variable. The independent variable, "Gamification Approach in Training Development," has a Cronbach's Alpha value of 0.937 across 23 items, which indicates "Very Good" reliability. The dependent variable, "Job Performance in Service Sector," has a Cronbach's Alpha value of 0.841 across 18 items, which also indicates "Very Good" reliability. These results suggest that the questionnaire items for both variables are reliable and suitable for use in actual data collection.

Table 5 Reliability test for pilot study

No	Variables	Number of items	Cronbach's Alpha (α)
1.	Gamification Approach in Training Development	23	0.937
2.	Job Performance in the Service Sector	18	0.841

4.4 Actual Data

The actual study was conducted after the results of the pilot study that the questionnaire was reliable and valid. Table 6 shows the results of the reliability test conducted for the actual study.

Table 6 Reliability test for actual study

No	Variables	Number of items	Cronbach's Alpha (α)
1.	Gamification Approach in Training Development	23	0.942
2.	Job Performance in the Service Sector	18	0.905

4.5 Demographic Analysis

The questions were designed to gather demographic information from the respondents. In general, the questions were related to respondents' gender, age, race, and working experience. All the data from the questionnaire answered have been analysed, and the results were summarised in Table 7.

Table 7 Summary of demographic analysis

Demographic	Classification	Frequency (N)	Percentage (%)
Gender	Male	207	49.8
	Female	205	50.2
Age	15-27	82	19.9
	28-43	137	33.3
	44-59	139	33.7
	60 and above	54	13.1
Race	Malay	159	38.6
	Chinese	178	43.2
	Indian	73	17.7
	Others	2	0.4

Working Experience (years)	Less than a year	66	16.0
	1 - 2	140	34.8
	3 - 4	130	31.0
	5 years or more	76	18.4

4.6 Descriptive Analysis

4.6.1 Descriptive data for Gamification Approach in Training Development

Table 8 provides a descriptive analysis of the gamification approach used in training development. It includes responses to 23 items that assess participants' attitudes towards various gamification elements. The mean scores range from 3.59 to 4.00, with standard deviations of 0.982 to 1.268, indicating moderate to high levels of agreement. Items with the highest levels of agreement included "Task rubrics have a variety of styles and are interesting" (mean = 4.00, SD = 1.190) and "Supervisor recommends excellent work and ideas on time to demonstrate learning successes" (mean = 3.96, SD = 1.217). The majority of responses indicate a positive perception, with a few items showing moderate agreement, such as "Rich and interesting topics for thematic discussions" (mean = 3.63, SD = 1.086).

Table 8 Mean and standard deviation for gamification approach in training development

Item	Mean	Standard Deviation
I can clarify my learning task	3.94	1.221
I quickly learnt a task requirement to satisfy the criteria	3.66	1.112
Eco Design and Packaging	3.94	1.236
I quickly learned the rules for selecting outstanding employee.	3.67	1.110
I can quickly find out the weighting of the scores for the compliance items.	3.70	1.070
I am aware of the ranking points in the training.	3.86	1.263
I can keep track of my learning progress through the learning progress bar.	3.93	1.248
The recognition of the supervisor proved to be quite beneficial for my training.	3.59	1.167
Resourceful and practical with new content from time to time.	3.76	0.982
Timely release of program newsletters.	3.96	1.217
Supervisor recommend excellent works and ideas on time to demonstrate learning successes.	3.87	1.259
I am interested in the video instruction format.	3.69	1.067
I am interested in the online guided format.	4.00	1.190
Task rubrics have a variety of styles and are interesting.	3.63	1.086
Rich and interesting topics for thematic discussions.	3.71	1.060
I can communicate with others in my personal space.	3.95	1.257
I can communicate with others in the topic discussion forum.	3.92	1.216
I can communicate with tutors in the work area.	3.63	1.140
The online discussion format is lively and interesting.	3.89	1.245
I can control the progress of a video.	3.66	1.070
I can choose my own duty topics or discussion topics.	3.88	1.268
I am able to turn in multiple papers or tasks.	3.86	1.254
Supervisor will push my favorite learning resources.	3.72	1.080

I can easily modify personal information on a platform.	3.94	1.221
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4.6.2 Descriptive data for Job Performance in the Service Sector

Table 9 shows a descriptive analysis of job performance among service sector participants, using 18 items to analyse various aspects of performance. The mean score range is from 2.75 to 4.27, with standard deviations of 0.910 to 1.536. Items with high agreement levels include "I took on additional responsibilities" (mean = 4.27, SD = 1.113) and "I managed my time well" (mean = 4.26, SD = 1.127). In contrast, there is moderate agreement on items related to negative aspects of work, such as "I made problems at work bigger than they were" (mean = 2.75, SD = 1.504). These findings highlight overall strong job performance while also identifying potential areas for improvement in terms of workplace negativity.

Table 9 Mean and standard deviation for job performance in service sector

Item	Mean	Standard Deviation
I managed to plan my work so that I can finished it on time.	4.08	1.112
I kept in mind the work result I needed to achieve.	4.00	1.023
I was able to set priorities.	3.85	0.947
I was able to carry out my work efficiently.	4.25	1.098
I managed my time well.	4.26	1.127
I started a new task on my own initiative after finishing my previous ones.	3.86	0.910
When there were difficult tasks available, I took them on.	3.77	0.972
I worked on keeping my job-related knowledge up-to-date.	4.21	1.145
I worked on keeping my work skills up-to-date	3.82	0.910
I came up with creative solutions for new problems.	3.86	0.916
I took on additional responsibilities.	4.27	1.113
I continually find new challenges in my work.	3.82	0.959
I took an active part in consultations and/or meetings.	3.81	0.918
I complained about minor work-related issues at work.	3.09	1.488
I made problems at work bigger than they were.	2.75	1.504
I focused on the negative aspects of situation at work instead of the positive aspects.	2.92	1.237
I talked to colleagues about the negative aspects of my work.	2.76	1.426
I talked to people outside the organization about the negative aspects of my work.	3.05	1.536

4.7 Normality Test

The Kolmogorov-Smirnov test was used to test for normality because there were more than 50 respondents. The Kolmogorov-Smirnov test is used to determine whether the data follows a normal distribution. In the Kolmogorov-Smirnov test (K-S), the significant value (p-value) indicates whether or not the data follows a normal distribution. If the p-value is greater than 0.05, the data is considered to have a normal distribution. This indicates that the difference between data and distribution normal is not significant. While If the p-value is less than 0.05, the data is assumed to not follow a normal distribution. This indicates that there is a significant difference between the data and the normal distribution.

Based on Table 10 normality test results, all p-value values are less than 0.001, which means the p-value is very small. Because the p-value less than 0.05, this clearly indicates that the data does not follow a distribution normal. Therefore, both variables for gamification approach in training development and job performance in service sector have data that does not follow a normal distribution. Briefly, a small p-value indicates that the data has a difference significantly different from the normal distribution.

Table 10 Result of Normality Test

Tests of Normality						
Variable	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Independent Variables						
Gamification Approach	.325	412	<.000	.769	412	<.000
Dependent Variables						
Job Performance in Service Sector	.191	412	<.000	.922	412	<.000

4.8 Correlation analysis

Correlation analysis measures the strength of a connection among two sets of items, which can be a primary outcome and an independent variable or even two independent variables. Table 11 shows the Spearman’s rho correlation analysis between the gamification approach in training development and job performance in the service sector. The correlation coefficient between these two variables is 0.610, indicating a moderate positive relationship. This suggests that as the effectiveness of the gamification approach in training increases, job performance in the service sector tends to improve correspondingly. The significance value (Sig. 2-tailed) is 0.000, which confirms that the correlation is statistically significant at a standard significance level ($p < 0.05$). With a sample size of 412 participants, the analysis provides robust evidence supporting the relationship between these variables. Based on the correlation analysis results, the hypothesis testing results for H1 are shown in Table 12 as below. This research focuses on the importance of gamification strategies in enhancing job performance, demonstrating their potential to positively impact employee engagement and productivity in the service sector.

Table 11 Result of Correlation Test

			Gamification Approach in Training Development	Job Performance in Service Sector
Spearman’s rho	Gamification Approach in Training Development	Correlation	1.000	0.610
		Coefficient	-	0.000
		Sig. (2-tailed)	-	0.000
		N	412	412
	Job Performance in Service Sector	Correlation	0.610	1.000
		Coefficient	0.000	-
	Sig. (2-tailed)	0.000	-	
	N	412	412	

Table 12 Hypothesis testing results

Hypothesis	Result
H1: There is a significant positive relationship between gamification approach in training and job performance in service sector.	Supported

5. Conclusion

The findings of this study provide robust evidence that gamification has a transformative impact on training development and job performance in the service sector. By integrating elements such as leaderboards, rewards, and interactive challenges, gamification creates a more engaging and dynamic training environment. These gamified elements address key psychological drivers such as motivation, satisfaction, and skill retention, which are critical for enhancing job performance.

The first research objective is to understand the level of gamification in training programs within the service sector. Results showed that organisations implementing gamification reported significantly higher employee engagement during training sessions. Features such as real-time feedback, progression tracking, and immersive challenges created an environment where employees were motivated to actively participate and learn. This aligns with Self-Determination Theory, which posits that fulfilling autonomy, competence, and relatedness needs enhances intrinsic motivation.

The second chapter of research aimed to assess the level of job performance in the service sector. The findings revealed that employees who underwent gamified training exhibited higher levels of productivity, problem-solving ability, and customer service excellence. For example, gamification fostered healthy competition among employees through leaderboards and team challenges, leading to improved collaboration and efficiency. Moreover, employees expressed greater satisfaction and a sense of accomplishment when achieving milestones, reinforcing their commitment to organisational goals.

The third chapter of research is to investigate the relationship between gamified training and job performance. The study confirmed a strong positive correlation between these variables. Gamified training significantly enhanced knowledge retention, skills application, and overall employee confidence, directly contributing to improved job performance. Additionally, the findings indicated that gamification serves as a bridge between training development and performance outcomes, effectively mediating this relationship.

These findings reinforce the idea that training does not have to be a passive process when employees enjoy learning, they are more likely to retain information and apply it effectively in their roles. One of the key takeaways from this study is that employees who experience gamified training tend to show higher engagement levels. Features like instant feedback, achievement badges, and progress tracking make learning feel more interactive and rewarding. This aligns with Self-Determination Theory (Ryan & Deci, 2000), which suggests that people are more motivated when their psychological needs are met. Past studies have also found that when employees feel in control of their learning and receive recognition for their progress, they are more likely to stay engaged and perform better at work (Hamari, 2014).

Beyond engagement, the study also looked at overall job performance in the service sector. Employees who underwent gamified training demonstrated improved productivity, problem-solving skills, and customer service performance. The use of competition-based features appeared to encourage employees to push themselves further while also fostering teamwork. This is consistent with Werbach and Hunter (2012), who found that healthy competition and achievement-based incentives in gamification enhance motivation and drive better workplace performance. Moreover, employees reported a greater sense of satisfaction and confidence in their abilities, which naturally translated into higher job efficiency.

The study also confirmed a strong relationship between gamified training and job performance, with employees showing better knowledge retention and skill application. This echoes findings by Zainuddin *et al.* (2020), who observed that gamification helps learners absorb and recall information more effectively over time. Essentially, gamification makes training feel less like a chore and more like an enjoyable challenge, which encourages continuous improvement.

However, it's important to acknowledge the challenges that come with implementing gamification, as some employees might find the transition difficult. Additionally, the initial investment in gamified training tools and software can be costly. This aligns with previous research by Landers *et al.* (2017), which found that while gamification can be highly effective, organisations need to tailor their approach based on their workforce demographics and technological readiness.

Overall, this study reinforces the idea that gamification can be a game-changer in training and development. It can improve overall job performance, strengthen skills, and increase employee engagement when done correctly. However, for organisations to fully benefit from this approach, they must consider employee preferences, provide adequate support, and ensure that gamified elements align with the company's goals and culture.

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Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

Author Contribution

*The authors confirm contribution to the paper as follows: **study conception and design:** Alea Zaid and Shazaitul Azreen Rodzalan.; **data collection:** Alea Zaid and Shazaitul Azreen Rodzalan.; **analysis and interpretation of results:** Alea Zaid and Shazaitul Azreen Rodzalan.; **draft manuscript preparation:** Alea Zaid and Shazaitul Azreen Rodzalan. All authors reviewed the results and approved the final version of the manuscript.*

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