Towards a Gamification Solution for Enhancing Employee Onboarding Experience

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Abstract: Human Resources Management (HRM) plays a critical role in developing a productive workforce, with the onboarding process being essential in preparing new employees for success. The onboarding encompasses four components, known as the four Cs: Compliance, Clarification, Culture, and Connection. Managers view the onboarding process as a way to deliver comprehensive information. Consequently, new employees encounter difficulties when transitioning to a new organization, such as adjusting to policies, understanding roles, adapting to the culture, as well as connecting with colleagues. Recently, the HRM department has adopted an innovative approach known as gamification. Gamification offers several benefits for HRM, such as enhancing recruitment, facilitating integration, and improving training processes. This study proposes gamification as a solution to assist employees during their onboarding process, focusing on the four Cs of onboarding. Additionally, it explores employees' perspectives on their onboarding experience, and identifies the most needed onboarding components and workplace satisfaction. A mixed-methods research approach was used to create a questionnaire based on the four Cs, completed by 230 participants. Both descriptive analysis and thematic analysis were used to examine the quantitative and qualitative data, respectively. As a result, participants identified relationships and connections within the work environment as the most needed aspects that HRM needs to focus on during onboarding and throughout employment. Accordingly, a sample gamified prototype has been developed to enhance employee connections during onboarding. Overall, organizations must support new employees and use innovative technologies, such as gamification, to improve onboarding processes.

Keywords: Gamification, Game-based Learning, Employee Onboarding, Four Cs, Employee Engagement, Digital Onboarding Tools

1. INTRODUCTION

Human Resources Management (HRM) is essential in driving an organization's success and growth [1] while playing a crucial role in managing the employee onboarding process. The term 'onboarding' has gained increasing usage since its emergence in the late 1990s [2]. In earlier literature, it was commonly referred to as orientation, induction, or organizational socialization [3], [2], [4]. The onboarding process involves introducing new employees to the organization and preparing them for their job roles [4]. According to Bauer [4], onboarding consists of four main components, referred to as the four Cs, which span from start to finish. Compliance entails introducing new employees to legal regulations, policies, and the code of conduct of the workplace [5]. Clarification provides new employees with clear guidance regarding their responsibilities. Culture involves an organization's values and history. Connection refers to the new employee's integration within the environment.

Most managers view the onboarding process as an opportunity to provide new employees with extensive information about their work. Accordingly, traditional onboarding methods remain in use. For instance, as noted by [6], traditional onboarding sessions presented through PowerPoint slides often leave employees feeling bored and disconnected from their colleagues. The method of delivering information can be insufficient and overwhelming for new employees [1]. In addition, a study found a limited use of modern tools, such as online training materials or simulation methods, in onboarding processes [7]. However, onboarding extends beyond merely delivering information; it encompasses a variety of activities aimed at fostering a sense of welcome, engagement, and integration by familiarizing new hires with the work environment [8]. The use of technology in onboarding is currently limited, but conducting further research in the future to explore its advantages could be valuable in enhancing the onboarding process [7].

Considering these challenges, this study explores gamification as a tool to enhance the onboarding process, focusing on the four Cs. Gamification, which introduces game concepts into real-life contexts, represents an innovative ap-

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proach that extends beyond the boundaries of video games [9]. The effectiveness of gamification has been shown across various contexts in boosting motivation and enhancing participation rates [10]. According to eLearning Learning, as stated in [11], gamification increases employee engagement by about 60% and productivity by 50%. Numerous studies have shown that incorporating gamification in the workplace significantly increases employee engagement and productivity, particularly in the HRM department [12], [13]. For instance, a study [6] that replaced PowerPoint presentations with gamification found this approach to be more beneficial and engaging during onboarding. On November 4, 2023, an informal face-to-face interview was held with the founder of a start-up HRM platform in Saudi Arabia. During the interview, the founder highlighted that the biggest challenge lies in the onboarding process, particularly in providing immediate feedback on tasks. Gamification was enthusiastically discussed as a valuable feature to enhance the platform.

Furthermore, this study will gather employees' views on their onboarding experience, identify key components they need, and assess their satisfaction with the work environment to develop tailored gamification strategies that enhance engagement and integration. An online mixed-methods questionnaire, based on the four Cs, will be used to collect data. The study contributes to understanding the onboarding process by examining the application of gamification to optimize the four Cs of onboarding. It provides valuable insights for academic research and organizational practice by identifying specific onboarding components that require enhancement to improve employee integration through gamification. It will address the following Research Questions (RQs).

- RQ1: How can gamification strategies enhance the content of onboarding in line with the four Cs?

- RQ2: What do employees perceive as the most needed component of the onboarding process, as defined by the four Cs?

- RQ3: What key factors influence employees' overall satisfaction or dissatisfaction with their work environment, as revealed through thematic analysis?

2. Literature Review
A. Onboarding Practices
The onboarding process is complex and varies across organizations [7], with several practices discussed. Based on this study [14], an effective onboarding process should include three welcoming components: a structured corporate welcome, a manager welcome, and a coworker welcome, which are expected to enhance commitment and engagement. It tested this hypothesis using a validated questionnaire and interviews with HR managers and new employees. Reaching 347 respondents from organizations over two months, the study confirmed that these components significantly boost work engagement and commitment. According

to [15], the study focused on the Inform-Welcome-Guide (IWG), which includes providing information, welcoming new employees, and offering guidance. It was evaluated through a survey of 373 new employees, the study found IWG to be effective in facilitating employee adjustment.

Besides, [16] investigated onboarding IT professionals, proposing a model with three key activities: orientation, training, and support. These activities impact onboarding success and organizational fit, affecting job satisfaction and turnover intention. The model was assessed through a survey of 102 IT professionals, revealing that support had the greatest impact and highlighting a relationship between onboarding success and job satisfaction. Additionally, this study [17] shed light on physician onboarding practices through semi-structured interviews with 20 physicians. The results showed that interpersonal relationships can influence a physician's work. For future work, it is recommended to provide standard onboarding content to be followed by organizations. Another study [7] revealed that, in various organizations, onboarding typically relies on on-the-job learning, mentoring, and printed materials, with minimal use of modern techniques.

Furthermore, [18] interviewed three case studies about their onboarding processes for software developers. Findings revealed that each case had its own onboarding program and duration, integrating recruitment, meetings, and feedback. The study addresses the Clarification and Connection aspects of the four Cs. Regarding Clarification, the case studies emphasize the necessity of providing clear guidance and feedback on IT roles. Regarding Connection, the case studies focus on integrating team members without considering it solely part of the onboarding process. In addition, [19] assessed the four Cs of onboarding—perceived utility, organizational support, commitment, and job satisfaction—using a survey of 382 participants. The study found that a well-defined onboarding process addresses at least the first three Cs, leading to higher perceived utility. Establishing all four Cs enhances support, commitment, and satisfaction. While this study [20] found Connection closely related to job commitment and embeddedness. According to [2], the four Cs focus on the content of onboarding. Overall, the terms of the four Cs of onboarding are organized in Figure 1 [4], [2].
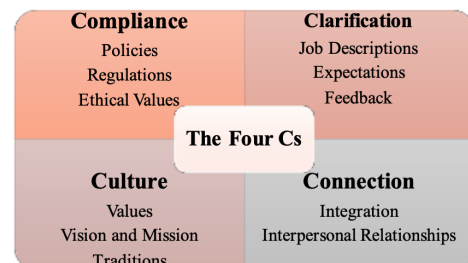

Figure 1. The four Cs of onboarding terms, adopted from [4], [2]

B. Gamification Trends in HRM

The adoption of gamification in HRM, particularly in onboarding, has been demonstrated in various studies. A systematic review [21] conducted from 2013 to 2022 on gamification in HR found that research on gamification started with few publications and has recently reached its highest level. Notably, as stated in [22], gamification is commonly used digitally, either by using specialized platforms, incorporating its elements into existing software, or developing custom applications. Based on [11], the study compared two popular gamification applications in Indonesia. One of the applications targets employees, encouraging them to learn new skills, enhance working methods, and allows HR divisions to monitor progress. It has over 15 million users, demonstrating its popularity. Furthermore, a 12-month longitudinal research [23] investigated a gamified system named BRAVO HRM, implemented by a multinational organization with approximately 10,000 employees in the United States. The system integrates various HRM functions, including onboarding, training, knowledge sharing, and cooperation among members. The findings underscore the significant impact of gamified HRM functions on positively influencing employees' behavior. Additionally, in this study [24], a large company with 17,000 employees examined a prototype of a gamified application for recruiting, onboarding, or integrating new employees, which proved highly beneficial. Besides, this study [25] examined 134 large firms and found that firms using mobile technology in HR gamification experienced a positive impact on employee job engagement and satisfaction. Consequently, this leads to improved job and financial performance.

As stated in [26], gamification can be effective in employee onboarding by facilitating integration. It also clarifies team members' performance for accountability by showing the progress of each member. Moreover, this study [12] examined key gamified features in onboarding applications, such as Onboarding-Tree, which visualizes progress; Team-Bingo, which helps new employees integrate with teams; and QuizClash, which uses multiplayer quizzes to engage employees. The study developed and compared a gamified onboarding application with a non-gamified version, finding that the gamified version was preferred. Moreover, this study [6] used gamification to support newly hired nurses during onboarding, replacing traditional PowerPoint presentations with missions, points, and rewards. Gamification improved team building, engagement, and information delivery, helping new employees integrate effectively. Besides, this study [27] believes in the effectiveness of gamification in enhancing employee training, such as through points and leaderboards. It can connect teams, create a happy environment, and foster loyalty and engagement.

C. Gamification in Relation to the Four Cs of Onboarding Concepts

Several studies demonstrate that gamification effectively brings about positive changes in various areas, similar to the four Cs of the onboarding concept. This study [28] focused on the application of gamification within policy compliance, particularly during COVID-19, to promote social distancing and enhance user behaviors. The study developed interactive interfaces featuring points and leaderboards, demonstrating the effectiveness of gamification in positively changing behavior related to social distancing.

Furthermore, this study [29] proposed a gamified mobile application for orienting new students on how to use library services. The application utilized points, time pressure, choices, and a leaderboard. The findings showed that intrinsic motivation and knowledge retention were enhanced, suggesting that gamification is valuable for learning about library services. Moreover, this study [30] demonstrated gamification's ability to increase engagement, learning effectiveness, and satisfaction in lectures. It enhanced the overall quality of learning among students. For instance, it emphasized the significance of gamified challenges that positively affect the learning process and engagement. Additionally, this study [31] explored gamified learning with Massive Open Online Courses (MOOCs), including challenges and quizzes, emphasizing increased intrinsic motivation and proactive learning.

Based on [32], the study examined how social gamification affordances (e.g., interactivity, cooperation, and competition) affect the use of green IT services. Interactivity allows for user engagement through likes and comments, cooperation involves team-based goals, and competition uses elements like leaderboards. The study found that these affordances positively impact user recognition. Based on Self-Determination Theory (SDT), this study [33] found that teamwork has the ability to increase relatedness, competence, and autonomy in a learning environment, creating an engaging environment with peers. Moreover, this study [34] discussed the positive relationship between employees' experiences with gamification and its impact on team identity development. Overall, this study [35] found that to address work engagement, gamification should be incorporated as a promising solution. Additionally, SDT and its satisfaction needs—such as relatedness, competence, and autonomy—should be recognized for their critical role in building an effective solution.

D. Discussion

Employee onboarding has been well-established as a key driver of employee commitment, satisfaction, and engagement [19], [14]. According to [2], the most cited onboarding practices are the four Cs and IWG. The IWG offers strategies, while the four Cs focus on the essential content during onboarding [2]. Table I summarizes related practices; most of the studies are either quantitative or qualitative. Notably, there is a continuous need to examine the success of onboarding [16] and the integration of technology into the process [7]. Besides, focusing on specific onboarding practice is limited in studies [15], [16]. Related literature highlights the role of gamification in HRM, particularly in the onboarding process. Besides, it suggests its ability to

align with the four Cs: delivering information [6], [12], [31], [30], enhancing behavior [28], [23], and integrating employees [27], [6], [12], [32] through an engaging environment. Despite its usefulness, gamification still requires thorough investigation in HR research, including employee onboarding research [12], [21]. Therefore, this study will focus on enhancing the onboarding experience with respect to the four Cs practice through innovative technology, such as gamification. The research will begin by identifying the components of the four Cs that should be prioritized from the employees' perspective. The employees' perspective will be collected through a mixed-methods questionnaire. To the best of our knowledge, this is the first study to propose using gamification in relation to the four Cs of onboarding and assessing employees' perceived needs.

TABLE I. Summary of the onboarding practices

Ref.	Study type	Sample size	Key findings
[14]	Quantitative	347	The welcoming atmosphere contributes to employee engagement and commitment to a job.
[15]	Quantitative	373	The IWG works effectively to adjust new employees.
[16]	Quantitative	102	The support provided during onboarding is crucial.
[17]	Qualitative	20	The importance of onboarding for achieving employees effectiveness.
[18]	Qualitative	3	Clarification and Connection aspects need to be improved.
[19]	Quantitative	382	Establishing the four Cs leads to increased commitment, satisfaction, and support.

3. Methodology

This study employs an online questionnaire using a mixed-methods approach, which combines both quantitative and qualitative analysis of numerical and textual data [36], guided by the four Cs. This approach enabled a clear identification of employees' perspectives on onboarding and their satisfaction. The research follows the methodology outlined in Figure 2. The first step involves conducting a literature review, followed by the initial design of the questionnaire. Once the design is finalized, it will be sent to supervisors and the HR manager for approval. After receiving approval, the questionnaire will be distributed to the sample, data will be collected and analyzed, and both quantitative and qualitative results will be reported. The questionnaire was administered from March to April 2024.
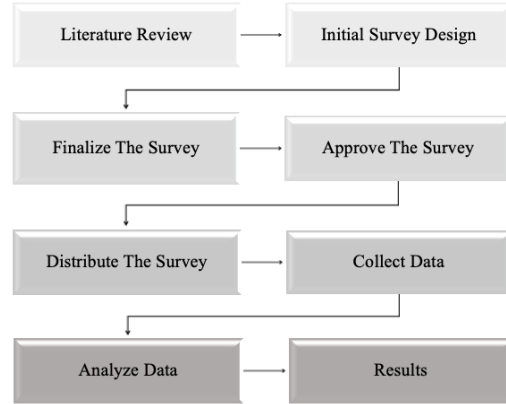
Further details will be provided in the next sections.

Figure 2. Research methodology

A. Sample of the Study

This study targets individuals with prior work experience in organizations and is not restricted to a specific duration of employment. A random sampling technique was employed, ensuring every individual had an equal chance to participate in the questionnaire across various fields [37]. While time-consuming, this technique reduces bias and is straightforward to perform [37]. According to [38], a sample size of 200 is considered fair, while 300 is considered good. In this study, the total number of participants was 302. After excluding those who had never been employed before, the questionnaire had 230 respondents (response rate: 75.70%; n = 230). Notably, the sample size in this research aligns well with those of similar studies, as demonstrated in Table I. The questionnaire was distributed through social media platforms such as WhatsApp, LinkedIn, Telegram, and X (formerly Twitter). It was administered in Saudi Arabia, and participation was completely voluntary. Participants were informed about the study's objectives, assured of anonymity, and informed about the purpose of data collection. Periodic reminders were sent throughout the month to encourage participation.

B. Design the Questionnaire

The questionnaire is structured to gather employees' feedback on the main aspects of the four Cs of onboarding, aiming to identify their needs, and assess their onboarding experiences and overall satisfaction. The instrument was a self-developed questionnaire designed after conducting an extensive literature review and developed using Google Forms. Moreover, the questionnaire is intended for those who have confirmed their employment are eligible to complete the questionnaire. It is divided into three main parts, as illustrated below. Overall, the questionnaire consisted of 40 questions, available in both Arabic and English, featuring both closed-ended and open-ended formats.

Part 1: General information

In this part, the questions are designed to capture general information about the respondents, including demographic information and their onboarding information. There are a total of 11 required questions in this part.

Part 2: The four Cs of onboarding

In this part, the questions are extracted from the terms of the four Cs of onboarding, as shown in Figure 1. There is a section dedicated to each component of the four Cs [4]. Each section has about four to five relevant required questions. The options are based on a five-point Likert scale, widely recognized for its effectiveness in evaluating responses, ranging from strongly agree (5) to strongly disagree (1) [39].

Part 3: Overall onboarding satisfaction

This part evaluates the importance of the four Cs and employees' onboarding experiences from their perspective. It includes a checkbox question regarding the influential components of the four Cs, allowing respondents to directly choose the needed ones. Additionally, there are questions about overall satisfaction, rated on a five-point Likert scale, as well as two open-ended questions for respondents to share their opinions, complaints, and suggestions. All questions were required except the open-ended questions.

Overall, to ensure the validity of the questionnaire, it was reviewed by an HR manager, supervisors, and an Arabic teacher, and some modifications were made. Furthermore, testing for clarity and understanding is recommended by getting feedback from friends or classmates [40]. A pilot study was conducted with employed individuals to check the questionnaire's clarity [36].

C. Data Analysis

This study will consider the closed-ended questions as quantitative data, applying descriptive statistical measures. Key statistical measures, including frequencies, percentages, mean, and Standard Deviation (SD), were calculated using Microsoft Excel to evaluate participants' responses. Additionally, an open-ended question in this study's questionnaire was analyzed as qualitative data using thematic analysis. Thematic analysis was chosen because it allows for identifying repeated responses and underlying meanings in qualitative data. According to [41], thematic analysis involves six phases for effective application: becoming familiar with the data, generating initial codes, searching for potential themes, reviewing and defining themes, and finally, producing the report. Each question typically yields two to six themes [42]. Themes were reviewed by other authors to ensure clarity.

4. Results and Discussion

A. Quantitative Results

In **the first part** of the questionnaire, Table II presents detailed information. About half of the respondents are aged 25-34, and 73.5% (n = 169) are female. Most respondents,

40% (n = 92), work in education, with a majority from small organizations, followed by large ones. Notably, as stated in [43], Saudi Arabian organizations are classified by size as micro (1-5 employees), small (6-49 employees), medium (50-249 employees), and large (250+ employees), as defined by Monshaat. Half of the respondents have been in their job for less than three years, while the rest have been there longer. Additionally, 62.2% (n = 143) of respondents are non-managerial employees, and over half did not receive onboarding materials, suggesting organizations may not prioritize onboarding adequately. However, approximately 45.70% (n = 105) of respondents with no onboarding experience still completed the questionnaire and provided comments. Despite the definition of onboarding being included, there may have been some misunderstanding of its true meaning and scope. Moreover, most respondents' onboarding programs lasted about a week. Half were introduced to their workplace by their manager, while 18.7% (n = 43) received no introduction. Traditional methods, such as manager or colleague supervision and PDF distribution, remain widely used.

In **the second part**, regarding the results of the four Cs questions, Table III demonstrates the range of values that will be followed in the five-point Likert scale. The analysis of the four Cs questions is shown below in Table IV. It was determined that Connection was the most needed component, averaging 3.35 with an SD of 1.21, which falls within the neutral range on the five-point Likert scale. Following closely was Clarification, averaging 3.45 and an SD of 1.20, indicating agreement. Culture and Compliance followed subsequently with averages of 3.47 and an SD of 1.18, and 3.58 and an SD of 1.16, respectively.

In **the third part**, respondents were asked about the four most important and challenging onboarding components (the four Cs). The majority, 56.50% (n = 130), identified Clarification as the most important component, followed by Compliance, Connection, and then Culture. It is demonstrated in Figure 3 using a bar chart to facilitate comparison of the categories [44]. The y-axis displays the frequency, while the x-axis represents the four Cs.
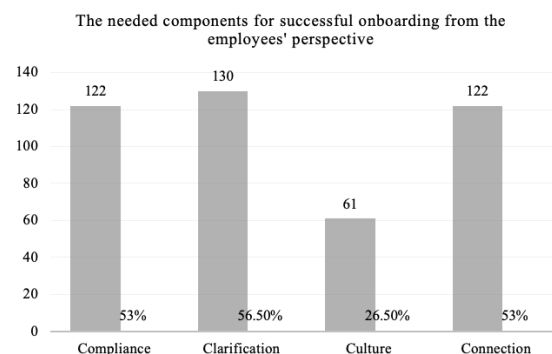
The needed components for successful onboarding from the employees' perspective

Figure 3. Respondents' perspective about the four Cs

TABLE II. Demographic and onboarding information (n = 230)

Demographic and onboarding info	Frequency (%)	Demographic and onboarding info	Frequency (%)
Age (years)		**Organization size (employees)**	
18 - 24	25 (10.9)	1 - 5	13 (5.7)
25 - 34	114 (49.6)	6 - 49	89 (38.7)
35 - 44	41 (17.8)	50 - 249	48 (20.9)
45 - 54	33 (14.3)	>250	80 (34.8)
>55	17 (7.4)	**Onboarding program**	
Gender		For 1 week	71 (30.9)
Male	61 (26.5)	1 month - 3 months	33 (14.3)
Female	169 (73.5)	>3 months	21 (9.1)
Work field		Not included	105 (45.7)
Education	92 (40)	**First Introducer**	
Technology	26 (11.3)	Direct manager	103 (44.8)
Administrative services	32 (13.9)	HR representative	40 (17.4)
Healthcare	24 (10.4)	Another employee	44 (19.1)
Others	56 (24.4)	No one	43 (18.7)
Managerial level		**Received onboarding materials**	
Strategic management	9 (3.9)	Yes	102 (44.3)
Tactical management	21 (9.1)	No	128 (55.7)
Operational management	57 (24.8)	**Onboarding procedures**	
Employee	143 (62.2)	A scheduled onboarding plan	51 (22.2)
Job duration		Introduction sessions	92 (40)
<3 months	11 (4.8)	Guided by an experienced employee	70 (30.4)
From 3 - 6 months	16 (7)	Task explanation by a direct manager	132 (57.4)
From 6 months - 1 year	33 (14.3)	Using interactive application	20 (8.7)
From 1 year - 3 years	58 (25.2)	Others	None of them, Online courses, PDF
>3 years	112 (48.7)		

TABLE III. Discretionary scale of the five-point Likert scale

Description	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Likert Scale	1	2	3	4	5
Mean	1.00 - 1.80	1.81 - 2.60	2.61 - 3.40	3.41 - 4.20	4.21 - 5.00

TABLE IV. Summary of the four Cs statistics

Rank	Section	Terms	Mean	SD	Scale
1	Compliance	Policies, Legal responsibilities, Ethical values.	3.58	1.16	Agree
3	Clarification	Internal systems, Tools, Expectations, Feedback.	3.45	1.20	Agree
2	Culture	Mission & Vision, Values, Culture Support in job, ideas, social interaction, professional growth.	3.47	1.18	Agree
4	Connection	Integration, Interpersonal relationships.	3.35	1.21	Neutral

The overall engagement and effectiveness of the on-boarding process received a neutral rating, averaging 3.33 with an SD of 1.14. Respondents strongly agreed that effective onboarding enhances productivity, with an average score of 4.32 and an SD of 0.79. However, overall satisfaction with the onboarding process itself was neutral, averaging 3.20 with an SD of 1.31. Additionally, participants expressed neutrality regarding satisfaction with their work environment compared to that of their friends, with an average rating of 3.38 and an SD of 1.29. Specifically, 19.1% (n = 44) strongly agreed, 40% (n = 92) agreed, 13.5% (n = 31) remained neutral, 14.8% (n = 34) disagreed, and 12.6% (n = 29) strongly disagreed. For further details, refer to Table V. **To conclude from the quantitative data,** almost half of the respondents do not have an onboarding program or receive onboarding materials, with only 8.7% engaging in onboarding with an interactive application. This shows a very low percentage of technology use. Regarding the four Cs, Connection had the lowest mean, followed by Clarification, Culture, and Compliance. Overall, onboarding satisfaction was considered neutral, while respondents strongly agreed that the onboarding experience affects productivity.

B. Qualitative Results

The results explain participants' reasons for their responses on overall satisfaction. Despite participants' neutral satisfaction with their friends' work environment, an open-ended question allowed them to express their opinions. It received 100 responses, providing valuable insights from participants' perspectives. The responses were categorized into five relevant themes, highlighting the importance of the work environment and its atmosphere: (1) positive work environment, (2) workplace cooperation and support, (3) challenges with HR practices and processes, (4) negative work environment, and (5) specific contextual challenges. For details, see Table VI, which illustrates themes and sub-themes. There are many similar responses; therefore, some key quotes are presented. Therefore, employee satisfaction with their work environment is significantly influenced by relationships, teamwork, and cooperation, whether positive or negative. The positive aspects include feeling comfortable and valued by the organization, understanding what is expected of them, and appreciating support from their managers. This encompasses interactions with both managerial staff and colleagues. As one noted, "*Due to the ease of communication among employees, they always welcome my questions with open arms and go the extra mile to ensure my understanding and empowerment in all tasks. The managers are wonderful and accommodating.*". While the negative aspects include poor communication, barriers to socialization and cooperation, and instances of discrimination. As one stated, "*My work environment lacks team spirit and transparency among us.*". Employee satisfaction is influenced by the support they receive from organizations, managers, and colleagues. Additionally, HR functions were mentioned by several respondents as affecting their satisfaction, including the absence of onboarding processes, training programs,

and clear policies, which pose challenges to effective job performance. For instance, one noted, "*The onboarding process lasted only half an hour, conducted by an HR employee who quickly explained the general rules. I was not introduced to my tasks, my team, or what was expected of me.*". Numerous respondents emphasized that instant feedback and regular follow-ups significantly contribute to employee satisfaction and engagement, thereby enhancing professional growth, which they felt was lacking.

Regarding feedback and recommendations about the research study, 77 responses were received to gather participants' opinions on the onboarding process. The findings reveal that many organizations overlook its importance. Respondents highlighted the need for strong workplace relationships, clear task clarification, immediate feedback, and evaluation. They also suggested providing a detailed organizational information file and focusing the study on a specific city for greater relevance. **To conclude from the qualitative data,** respondents actively engaged with the open-ended questions. The feedback demonstrates that the topic resonated with their needs. They expressed their needs, including the importance of onboarding, connection with colleagues, and job clarity. Additionally, respondents wish for greater recognition of onboarding from the organization.

C. Gamified Onboarding Prototype for Connection

Based on the questionnaire results, a prototype incorporating gamification technique was developed to support new employees, focusing on the Connection aspect. As a recommendation for implementing gamification, [45] suggests involving early user testing, reviewing similar onboarding practices, such as adding social features, and focusing on gamefulness experience, such as competition. The proposed prototype, initially created as a first draft in Adobe XD, was designed following extensive research [46], [45], [24]. It incorporates gamification elements such as points, leaderboards, and challenges. Additionally, it emphasizes cooperation and competition (e.g., among teams). The selected elements are impactful in achieving the goal of fostering connection. The core idea is to engage each user as part of a team, where points are earned from challenges and contribute to both individual and team progress. These challenges are designed to encourage social interaction among colleagues, promoting collaboration and building connections. As users earn points, their team moves up the leaderboard, unlocking badges as milestones along the way. This contributes to fostering the user's ability to discuss with their team and interact with other colleagues as required by the challenges. Figure 4 demonstrates the prototype, showing the splash screen, home screen, tasks, challenges, profile, and leaderboard from left to right. In September 2024, the prototype was presented at a three-day technical event at KAU, where it received positive feedback from a variety of visitors, including academics, students, and employees. It is anticipated to be implemented in organizations. Overall, this prototype serves as an initial

TABLE V. Summary of employees' satisfaction statistics

Rank	Term	Mean	SD	Scale
3	Engagement and Effectiveness	3.33	1.14	Neutral
1	Onboarding Impact Productivity	4.32	0.79	Strongly Agree
4	Overall Onboarding Satisfaction	3.20	1.31	Neutral
2	Work Environment Satisfaction Compared to Friends	3.38	1.29	Neutral

TABLE VI. Qualitative data from employees about work environment satisfaction

Statement/Question	Option	Theme	Sub-Theme(s)
Why did you choose this option regarding your work environment satisfaction compared to that of your friends' work environment?	**Strongly satisfied and satisfied**	Positive work environment	- Supportive leadership and culture - Flexibility - Positive relationships with colleagues and managers - Teamwork - Peer-support/friendship - Clarity of tasks
	Neutral	Workplace cooperation and support	- Lack of teamwork - Lack of workplace support
	Dissatisfied and strongly dissatisfied	Challenges with HR practices and processes	- Absence of onboarding and training - Absence of clear policies
		Negative work environment	- Perceived Discrimination - Lack of cooperation and teamwork - Lack of support and follow-up - Unclear tasks - Lack of professional growth
		Specific contextual challenges	- Branch connectivity across cities - Working in a start-up - Remote work with COVID-19

design to illustrate how gamification elements can align with the Connection of the four Cs in fostering interpersonal relationships and integration with colleagues. Other aspects, such as in-depth design details and implementation, will be left for future work.

D. Discussion

The onboarding process significantly influenced the participants in the questionnaire, emphasizing its importance and recommending that organizations should prioritize it more. The findings indicate that effective onboarding requires thorough planning and allocation of resources from HRM to support new employees. Although the majority of respondents are from large organizations, overall satisfaction with the onboarding process was neutral, with an average rating of 3.20. The collected onboarding information indicated that the majority lacked onboarding materials and structured procedures, relying solely on explanations from their direct manager. While almost half of the respondents have worked for more than three years, they still remember their onboarding experience. This highlights how the first impression lasts even beyond the onboarding, emphasizing the importance of the process.

To answer **the first research question**, gamification has gain popularity in HRM department, resulting to be used in large organizations widely, including the onboarding process [23], [25]. Based on the literature, several gamification applications are shown to be used regarding the meaning of the four Cs of onboarding purposes, revealing a positive impact on information delivery, social integration, and behavior change. This emphasizes the ability of gamification to assist employees during onboarding by creating a beneficial and engaging environment. For instance, creating a positive environment and fostering team bonding [27]. Consequently, employee engagement, productivity, and job satisfaction will increase [25], [6], [24]. Moreover, in the long-term, gamification can positively support HRM processes, as revealed by [23]. Additionally, the initial interview with the manager was well-received, demonstrating strong support for the use of gamification. Furthermore, the proposed prototype, featuring gamification with the Connection aspect, received positive feedback and was found to be enjoyable by visitors. This is a positive indication for implementing gamification in onboarding experiences.

To answer **the second research question**, the quantitative results revealed that Connection had the lowest average
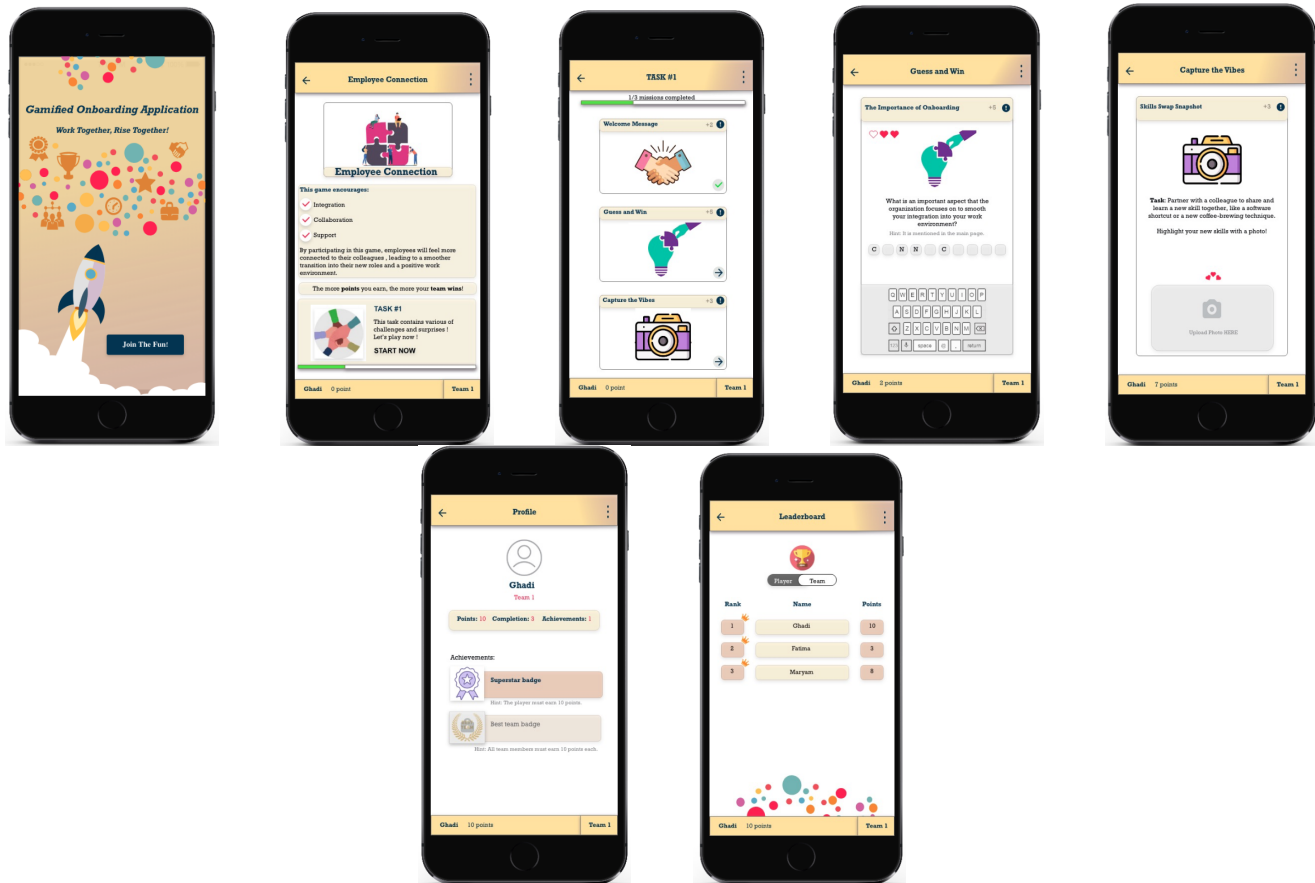
Figure 4. Gamified onboarding prototype for employee connection

score among the four Cs of onboarding, with a score of 3.35. This indicates weak integration and interpersonal relationships. Then, it was followed by Clarification of systems and tools, expectations, and feedback. Then, familiarizing with the organization's Culture, and lastly, Compliance, which had the highest average. Additionally, the qualitative results revealed that respondents emphasized their work satisfaction primarily depended on their connection, cooperation, and relationships with colleagues. As a result, the connectivity and integration of new employee plays a vital role from the first day of employment and last after onboarding.

To answer **the third research question**, participants expressed a neutral level of satisfaction with their work environment compared to their friends, with a score of 3.38. The work environment is a significant factor in determining employee satisfaction, particularly the relationships among managers and colleagues, including their support, teamwork, and cooperation. Additionally, the role of HRM is crucial in guiding employees and enhancing their knowledge through onboarding and training programs. Besides, ensuring task clarity and maintaining regular follow-up are essential for helping employees understand their roles.

Regular follow-up provides the necessary guidance and feedback, which facilitates successful integration into the organization. Other contextual challenges, such as COVID-19 pandemic, operating from multiple branches, and being a start-up, were mentioned. Overall, most of the feedback indicates that the employees were disappointed with their onboarding experiences and the lack of awareness from the organization regarding onboarding.

Therefore, the connection between employees is vital in onboarding and the overall work environment. It is the most frequently mentioned aspect in the questionnaire responses. Building this connection from the first day of employment is crucial, as it helps new employees integrate smoothly into the organization and remain satisfied throughout their employment. Consequently, it can increase peer-support, cooperation, and teamwork, resulting in a positive work environment. Furthermore, creating an engaged employee who is excited to work within the new organization is a crucial goal. Gamification, with its primary concept of creating an engaging environment, aligns well with the four Cs of onboarding as described previously. Particularly, gamification can be effectively employed in fostering connection and integration among new employees. However,

as noticed among the questionnaire results, the usage of interactive applications is limited. While technology is suggested to be utilized in onboarding [7]. Accordingly, the gamified prototype was designed to foster connections, presenting various activities to illustrate the concept. Moreover, appropriate gamified elements, such as leaderboards, challenges, and team-based features, were selected to foster connection. This will be valuable for utilizing social gamified features that facilitate interaction during onboarding [45]. Notably, implementing gamification is not guaranteed to be successful; it should align with the organization's goals, and the design should not demotivate users, such as through excessive competition [22]. The SDT can be applied as a solid foundation to ensure that the usage of the developed solution covers the satisfaction needs, which can lead to motivation, as mentioned in several studies [35], [33]. Overall, assisting employees experience a positive environment typically leads to desirable results such as increased engagement, satisfaction, and productivity.

E. Practical Implications

The study's findings highlight the potential of gamification in enhancing employee onboarding by fostering motivation, learning, and social integration. Employees were disappointed by the lack of recognition of onboarding in organizations. Traditional onboarding methods, such as PowerPoint slides or printed files, often lack interactivity, which reduces new employees' engagement and communication. Organizations should prioritize onboarding, particularly connection among new employees, as it is an essential process following the effort put into recruiting. By incorporating gamified elements such as challenges, points, and team-based features into the onboarding process, organizations can encourage employees to participate, connect, and learn actively. Furthermore, integrating SDT in designing and evaluating the proposed gamified solution ensures that employees experience a sense of autonomy, competence, and relatedness, leading to intrinsic motivation. Organizations that adopt a gamification approach can benefit from higher knowledge retention, improved teamwork, and a smoother transition for new hires. These insights can guide HR professionals in designing more effective onboarding strategies that not only connect new employees to the organization but also strengthen workplace integration from the start.

5. Conclusion and Future Work

Based on the analysis of 230 responses from the employee questionnaire, overall satisfaction with the onboarding process was found to be neutral. Similarly, engagement and effectiveness in onboarding were rated neutrally. Notably, among the four Cs of onboarding, Connection emerged as the most critical area needing improvement. This highlights an opportunity for organizations to innovate in this domain. Additionally, satisfaction with the work environment was neutral, primarily influenced by interpersonal relationships and the overall organizational atmosphere, including cooperation and support. This study proposes gamification as a potential solution to enhance the four Cs of onboarding, particularly in the areas where employees indicated the greatest need. Consequently, a gamified prototype specifically designed to foster connection and integration during onboarding by incorporating interactive challenges and team-based features. Besides, the gamification content should be tailored to match the organization's goals and employees' needs in order to achieve the targeted results. However, implementing gamification within onboarding suggests that it can be effective in fostering employee engagement, satisfaction, and productivity.

While this study yielded significant results, it faced certain limitations. The questionnaire was reviewed by only one HR manager due to availability constraints, which may have limited its comprehensiveness. Time constraints restricted data collection depth and required discussing the prototype with interface images instead of a functional version. Additionally, reliance on self-assessments may have introduced subjectivity, as questionnaires offer limited opportunities for detailed feedback. Future research should consider reviewing the questionnaire with more HR managers to benefit from diverse perspectives. Besides, expanding the sample size and incorporating qualitative methods, such as interviews or focus groups, to gain deeper insights into employee experiences. Additionally, exploring variable correlations could offer deeper insights into factors influencing the four Cs of onboarding. Future work should focus on further developing the proposed gamified prototype, with careful attention to its design, rules, and empirical testing in real-world organizations. Specific organizational contexts must also be considered when assessing gamification. Additionally, future research should explore gamification in relation to the four Cs of onboarding, particularly emphasizing Connection. Incorporating a strong theoretical basis will add value to these studies.

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