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Gamers Acceptance of Nintendo's Ring Fit as Exergaming and Gamified Learning Tool

Tony Wibowo[1*], Encik Mohammad Habib Tara [2], Farrel Ardhatama[3], Li Cen[4]

[1,2, 3,4]Universitas Internasional Batam
Kepulauan Riau, Indonesia
✉ 2231008.encik@uib.edu *

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Abstract

Background: Obesity continues to be a worldwide issue, worsened by sedentary lifestyles and excessive screen exposure. Exergames, which merge physical activity with interactive gaming, offer a creative approach to encouraging fitness and education. Nintendo's Ring Fit Adventure combines movement-based gameplay with goal-driven challenges that enhance motivation, engagement, and aspects of self-regulated learning (SRL).
Aims: This study investigated how Ring Fit Adventure is accepted as both an exergame and a gamified educational tool, highlighting its contribution to fostering self-regulated learning (SRL) behaviors such as setting goals, self-monitoring, and reflection. This study utilized the Technology Acceptance Model (TAM) alongside the DeLone and McLean Information Systems Success Model (D&M) to determine the factors that affect users' perceptions and intentions.
Methods: An experimental qualitative study was conducted with 50 students from Universitas Internasional Batam, who were intentionally selected. The participants played Ring Fit Adventure for 30 minutes and were then interviewed using TAM and D&M frameworks. Data collected from observations and interviews were descriptively analyzed to assess perceived usefulness, ease of use, system quality, satisfaction, and behaviors related to self-regulated learning (SRL).
Result: Results showed that the participants found Ring Fit to be engaging, user-friendly, and motivating. The game's feedback mechanism and adaptable challenges promote self-regulation by encouraging goal setting and performance tracking. Minor issues with the sensors did not significantly affect user satisfaction.
Conclusion: Ring Fit Adventure successfully combines fitness, entertainment, and self-directed learning aspects. By promoting independence, introspection, and ongoing involvement, exergaming has the potential to improve both physical well-being and the intrinsic drive for lifelong learning.

A. Introduction

Over the last 30 years, obesity has become a worldwide epidemic that continues to escalate. The rate of obesity has increased to the point where almost one-third of the global population is classified as obese or overweight (Chooi et al., 2019) Children typically engage in sedentary activities for approximately 7 hours each day, which includes screen time spent playing video games, watching media, and socializing. This has led to a growing number of overweight or obese children and teenagers (Norozi et al., 2020) Current guidelines suggest that children aged 5-17 should engage in at least 60 minutes of moderate-to-vigorous physical activity daily (Barbosa et al., 2021). However, interest in Active Video Games is often short-lived,

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as these games vary in physical activity levels and children may lose interest when the games cease to be enjoyable. This trend is attributed to the rapid advancement of technology, which has made sedentary behavior and leisure activities more prevalent, particularly among adolescents (Barbosa et al., 2021).

Apart from that, studies have revealed that people with more screen time are prone to become obese, lazy, sleepless, and tired. Most of the obese adults have no physical activities, and they are addicted to gaming, which causes a lot of rash effects on their behavior and their bodies (Afsar et al., 2023). Researchers have been trying to find new ways to make games less harmful and more useful in areas like health, education, sports, and the military.

Exergames (Active Video Games) are games that are designed to encourage physical activity. They utilize motion sensors and other interactive technology in order to make players perform certain real-life workout movements such as jumping, running, sit ups, or squats (Hamari et al., 2019). Recent studies have shown that exergames benefit players by improving their overall health and longevity especially in children and young adults. Studies have shown that exergames improved their cardiovascular health, reducing their body fat, and encouraging weight loss. Exergames offer a fun alternative to traditional workouts or exercises (Calcaterra et al., 2023).

In addition to conventional video games, there is a growing trend of Active Video Games (AVGs), where players engage by using their entire body to control the game. These games lead to greater motor activity in players compared to standard games. Within the realm of AVGs, there are specific exergames, which are various training programs often guided by a virtual trainer, aimed at promoting physical activity (PA). Numerous studies have shown that the physical exertion involved in AVGs positively impacts health improvement. It has been noted that the engaging nature of these games enables players to sustain physical activity for longer periods in an interactive manner, as opposed to traditional exercises, potentially leading to enhanced health benefits (Polecho'nski et al., 2019).

Numerous studies have underscored the advantages and positive effects of exercise games, known as exergames, on overall health. The term "exergame" is predominantly used by health researchers to describe video games that incorporate strength training, balance, or flexibility (Wang, 2024). Exergaming has captured both public and commercial interest because it merges enjoyment with fitness and is especially favored for interventions related to obesity (Comeras-Chueca et al., 2022). Additionally, exergames are seen as the future of fitness, offering a healthy and attractive alternative to other forms of physical activity to maintain regular exercise.

Released by Nintendo in 2019, Ring Fit Adventure combines traditional role-playing game (RPG) elements with fitness exercises using the Ring-Con controller and leg strap. Players engage in physical activities such as running, squats, yoga poses, and strength training to navigate through in-game levels and defeat enemies. These games include fantastical avatars that can be controlled by real-life body movements such as jogging, sprinting, and high knees (Siriphorn et al., 2024)

To address this gap, this study aims to gain a deeper understanding of user experiences by employing two research instruments: the Technology Acceptance Model (TAM) and the DeLone & McLean Information Systems Success Model (D&M Model). These models will help the researcher collect precise and thorough data on critical factors such as perceived usefulness, perceived ease of use, system quality, information quality, usage intentions, and overall user satisfaction. The study will also emphasize aspects of motivation and emotion to identify what factors influence the acceptance of Ring Fit Adventure.

This study focuses on addressing and understanding the acceptance of Nintendo Ring Fit Adventure among individuals using the TAM and the Delone & McLean model (D&M) as research tools. Therefore, focusing on key themes such as motivation and emotion. Research conducted by Hartanto et al. (2021) shows that players motivation to play games stems from the need for competence, autonomy, and relatedness further research conducted by Heiden et al. (2019) explains that from the emotional side, players tend to use video games as a means of distraction to regulate negative emotions caused by lower levels of satisfaction in life and self-esteem.

The integration of physical activity and gaming has opened new ways for promoting health and fitness, with Nintendo Ring Fit Adventure standing out as a prominent example (Chan et al., 2024). By combining interactive gameplay with physical exercise, it offers a unique and engaging approach to achieving fitness goals, particularly for individuals who may find traditional physical activity routines monotonous or intimidating. Exergaming has many of the same advantages for health as traditional modes of physical activity, including a variety of physical, mental, cognitive and social benefits, some benefits may arise

through increases in physical activity levels, although not all physical benefits (i.e., its impact on cardiovascular disease in adults) have been studied in relation to exergaming according to (O'Loughlin, 2020).

Health-focused video games can drive behavioral changes and encourage healthier lifestyles by impacting health-related activities (Berg, 2019). According to research by Zilidou & Bamidis (2022), with the rise of digital technology, exergames, which blend digital gaming with physical exercise, are frequently utilized as regular exercise routines. While these games were originally created for entertainment purposes, they are now increasingly employed to enhance health. (Chan et al., 2023) indicated that exergames offer a secure yet challenging virtual setting where participants can engage in physical and cognitive exercises that mimic daily movements, which might not be easily performed in real life.

Integrating gaming with physical exercise, game-based workouts make staying active more enjoyable and engaging. According to research by Marques et al. (2023), motivation is one of the most significant emotional influences on exercise, particularly in the realm of exergames. These video games, which are centered around physical activity, effectively enhance motivation by making exercise more entertaining and pleasurable. Marques et al. (2023) also notes that positive emotions like excitement, anticipation, and enthusiasm can boost the motivation to participate in exergames and help maintain a regular exercise routine.

According to Marques et al. (2023) negative emotions such as boredom and frustration can diminish the motivation to engage in exercise, resulting in disinterest in exergames. Beyond motivation, emotions play a crucial role in affecting exercise performance in exergames by influencing how effort is perceived (Graf et al., 2023). Indeed, Marques et al. (2023) highlighted that positive emotions can enhance exercise performance and foster a desire to continue the activity. On the other hand, negative emotions can amplify the perceived effort, making exergames seem more difficult and less enjoyable.

From an educational perspective, exergaming can be analyzed through the lens of SRL theory. SRL emphasizes learners' ability to actively plan, monitor, and evaluate their learning and performance (Wong et al., 2021). Within the context of exergaming, players engage in self-regulation by setting fitness goals, tracking in-game progress, adjusting exercise intensity, and reflecting on their performance outcomes. These activities align with the SRL cycle of forethought, performance, and self-reflection. Immediate feedback, progress tracking, and adaptive challenges present in games such as Ring Fit Adventure enhance metacognitive awareness and intrinsic motivation, which are crucial components of self-regulated learning. Furthermore, the immersive and interactive nature of exergames transforms the player from a passive participant to an active learner, fostering autonomy and perseverance in the learning process. Consequently, exergaming functions not only as a tool for physical activity but also as an educational medium that promotes self-directed learning, motivation, and goal-oriented behaviors.

The primary aim of this study was to investigate the acceptance of Nintendo Ring Fit Adventure as an exergaming option to combat obesity and emphasizes the aspects of motivation and emotion to identify the factors influencing the acceptance of Ring Fit Adventure. Exergames, such as Ring Fit Adventure, have revolutionized fitness by merging gaming with physical activity and offering an engaging alternative to conventional workouts. These games combine interactive gameplay with physical exercise, providing benefits in the physical, mental, and social dimensions. However, there is a clear gap in knowledge and information regarding its acceptance among obese people. Previous studies of this topic tend to speak more on the usability of Nintendo Ring Fit Adventure as a means for rehabilitation and a way to improve physical activity. With an evident gap of information this study aims to explore how well would Ring Fit Adventure be accepted among the community.

B. Research Methods

This study adopted a constructivist methodological position, grounded in the belief that knowledge is actively constructed through interaction with the environment and technology. Rather than seeking objective truths, the study emphasized the subjective meanings learners assigned to their experiences with exergaming as a gamified learning tool. This study sought to gain a deeper understanding of user experiences by employing two research instruments: the TAM and DeLone and McLean Information Systems Success (D&M) Model. These models facilitated the collection of precise and comprehensive data on critical factors such as perceived usefulness, perceived ease of use, system quality, information quality, usage intentions, and overall user satisfaction. This study employed a qualitative experimental methodology to achieve a comprehensive understanding of the acceptance of exergames in combating obesity. The

research involved 50 students from Universitas Internasional Batam, selected based on their status as gamers and were also measured by their BMI with the highest being 41.4 and the lowest being 30.1 with some students that were not obese as control. The sampling method used was purposive sampling, as participants were intentionally chosen based on characteristics pertinent to the study. The research was conducted at Universitas Internasional Batam, with data collection occurring over several months to ensure the thoroughness and accuracy of the collected data.

The Technology Acceptance Model (TAM) provides a framework for understanding how users come to accept and use technology. In the context of video games, TAM helps explain why players engage with certain games. Games with intuitive controls and interfaces that are perceived to offer valuable benefits, such as entertainment or skill development, are more likely to be adopted by users. It also highlights the importance of user experience and how it shapes gamers' attitudes toward a platform or game genre, influencing long-term engagement (Mlekus et al., 2020).

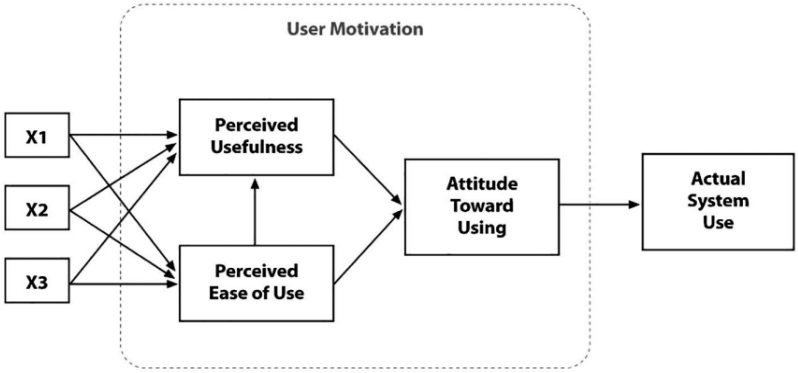

Figure 1. Technology Acceptance Model (Davis, 1986)

The DeLone and McLean (D&M) model is widely used to assess the success of information systems through six dimensions. The D&M model can evaluate the overall effectiveness of a game by analyzing factors such as graphical fidelity, narrative depth, technical performance, and customer support. For example, user-friendly design directly impacts user satisfaction and continuous use. Additionally, the "net benefits" dimension correlates with how games contribute to players' personal goals, such as relaxation or working out, further reinforcing their success (Sabeh et al., 2021).

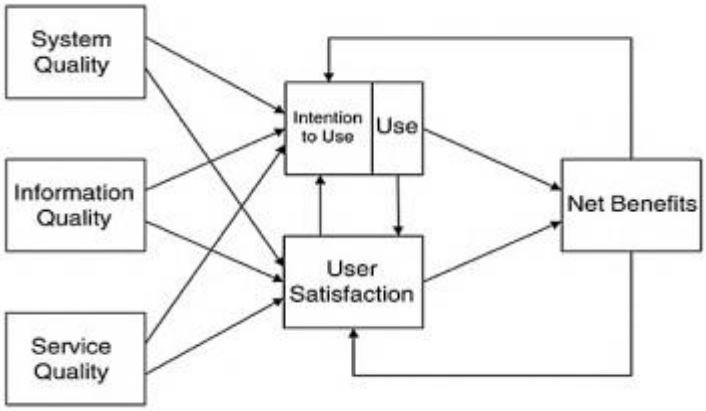

Figure 2. D&M Model (2003)

TAM and the D&M model share a strong correlation when applied to video games, as both focus on user perceptions, engagement, and outcomes. While TAM provides a foundation for understanding initial acceptance and engagement, the D&M model assesses broader, long-term factors of success. For instance, a game with high perceived ease of use and usefulness TAM is likely to also score well on system quality and user satisfaction (D&M). This synergy is especially evident in gamified environments like educational or fitness-focused games, where both adoption and sustained use are critical.

During the experiment, the researchers used Nintendo Ring Fit Adventure to understand how users perceived and responded to the game. Each participant played the game for 30 minutes. During this time, the researcher watched how well they followed the game's instructions, their feelings and physical reactions, how long they played, any breaks they took, their first thoughts on the game's controls and interface, and how easily they learned to play. The goal was to see how well they understood and followed the game instructions. Observations and notes helped evaluate how they adapted to the controls and interface. The researcher noted their feelings and physical reactions, such as comfort, tiredness, or enjoyment, to find out what motivates them. The time they spent playing, including breaks, was tracked to see how the game affected their commitment to physical activity. Afterward, participants were interviewed about their experiences with Nintendo Ring Fit Adventure.

The research continues with the interview, it can be inferred that the experiment's findings will undergo descriptive analysis. This involves examining observational data by detailing emerging patterns such as compliance with instructions, adaptability to controls, emotional reactions, and the length of sessions. Each behavior, including engagement, frustration, or enjoyment, was categorized to illustrate how participants interacted with Nintendo Ring Fit Adventure. The results aimed to provide a deeper insight into user experiences while engaging with Nintendo Ring Fit Adventure. Simultaneously, interview data collected after participants played the game were evaluated using the TAM and D&M models. Both observational and interview data were combined to offer a comprehensive understanding of the factors influencing the acceptance of Nintendo Ring Fit Adventure among obese players.

C. Results and Discussion

1. Result

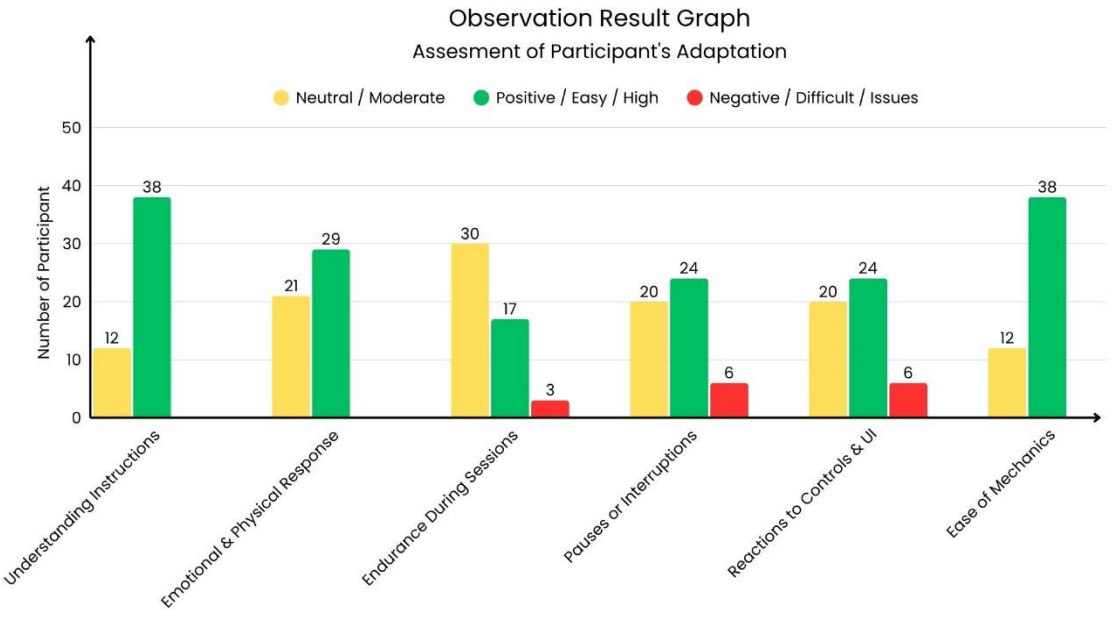

Figure 3. Observation Result Graph

Observations and notes were utilized to assess participants' adaptation to the controls and interface. Based on these observations, several conclusions were drawn. Based on these observations, several conclusions were drawn, including:"

Understanding the Game Instructions: Out of the participants, 38 mentioned that the instructions were extremely easy to understand, and 12 said they were relatively easy. No one encountered any difficulties, suggesting that the game provided clear guidance for beginners.

Emotional and Physical Responses: Out of the participants, 29 experienced positive emotions such us happiness and motivation, 21 had neutral feelings, and none reported any discomfort. This findings indicates that the game successfully promotes engagement and positive emotions.

Endurance During Sessions: 17 participants maintained their motivation and showed a willingness to continue regular use, whereas 30 preferred shorter sessions, and only 3 felt fatigued. This suggests a generally high level of engagement, despite variations in the individual's stamina.

Pauses or Interruptions: 24 participants completed sessions uninterruptedly, 20 had minor pauses but continued, and 6 faced major issues related to the foot motion sensor. Although the overall functionality was stable, the sensor accuracy warrants improvement.

Initial Reactions to Controls and Interface: 24 participants found the interface easy to use, 20 felt at ease from the start, and 6 noticed reduced accuracy, indicating a generally positive experience with room for improvement in system responsiveness.

Ease of Adapting to Game Mechanics: Among the participants, 38 found it very easy to adapt, while 12 found it fairly easy, indicating that users quickly understood the game dynamics. These systematic observations, bolstered by field notes, observation checklists, and follow-up interviews, strengthened the credibility and validity of the qualitative data, ensuring that the findings were empirically grounded and theoretically informed.

Interviews were conducted with 50 respondents after they tried the device for 30 minutes each, using questions categorized according to two theoretical frameworks: the TAM and the DeLone and McLean IS Success Model (D&M). Starting with the TAM framework:

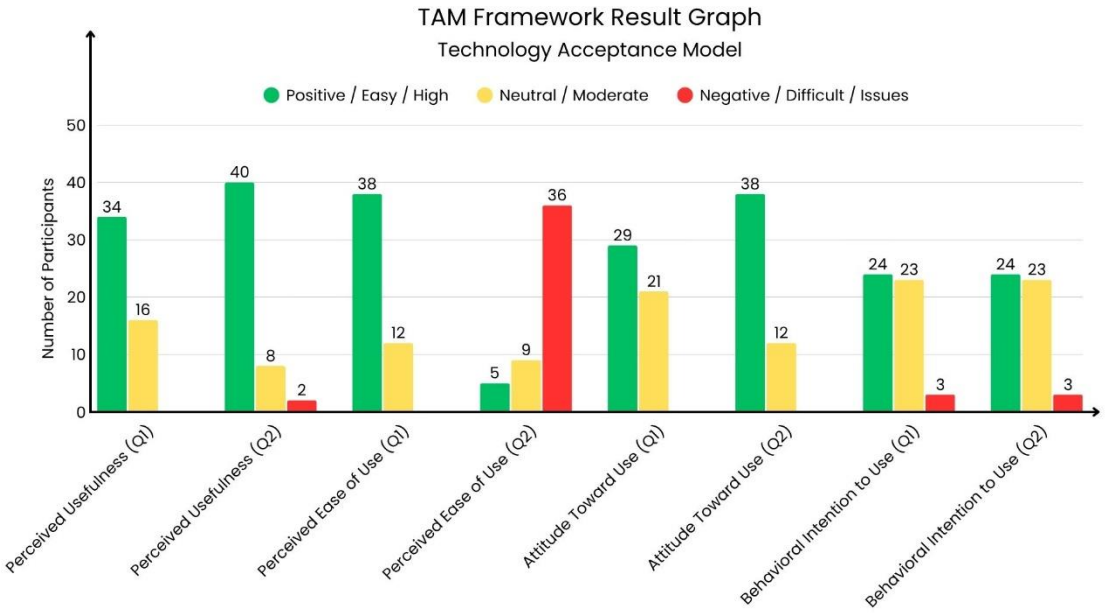

Figure 4. TAM Framework Result Graph

Perceived Usefulness (PU): According to the interview findings, most participants perceived Nintendo Ring Fit Adventure as offering substantial benefits in facilitating their exercise routines and achieving fitness objectives. Specifically, 34 respondents reported that the game significantly enhanced their physical activity levels, while 40 respondents expressed the belief that Ring Fit has the potential to assist in attaining fitness goals. Notably, there were no negative responses, leading to the conclusion that Ring Fit is highly beneficial in the context of health and fitness.

Perceived Ease of Use (PEOU): Most respondents reported that initiating use of the Nintendo Ring Fit Adventure was straightforward. Specifically, 38 respondents characterized their initial experience as very easy and practical, with only a minority expressing neutrality. Nevertheless, when asked about technical or navigational difficulties, a significant number of respondents 36 reported encountering challenges, particularly concerning the leg sensor. This indicates that while the system is generally perceived as user-friendly, technical issues persist that influence perceptions of ease of use.

Attitude Toward Use (ATU): The attitudes of users toward Ring Fit Adventure were predominantly positive. 29 respondents evaluated their experience with the device as enjoyable and beneficial, while an additional 21 respondents expressed a neutral stance. Notably, none of the respondents reported a negative

experience. Furthermore, 38 respondents indicated their willingness to recommend Ring Fit to others. This suggests that positive attitudes toward use are influenced by the health benefits and favorable experiences associated with the device.

Behavioral Intention to Use (BI): Regarding the intention to continue utilizing Ring Fit in the future, 24 respondents indicated a positive intention, 23 were neutral, and only three respondents expressed a refusal to continue. The primary barriers identified by respondents were predominantly external factors, notably the relatively high cost of the device. Additionally, several respondents mentioned the required investment as a reason for discontinuing use. Overall, despite financial constraints, the intention to continue using the device remained relatively high because of the benefits already experienced.

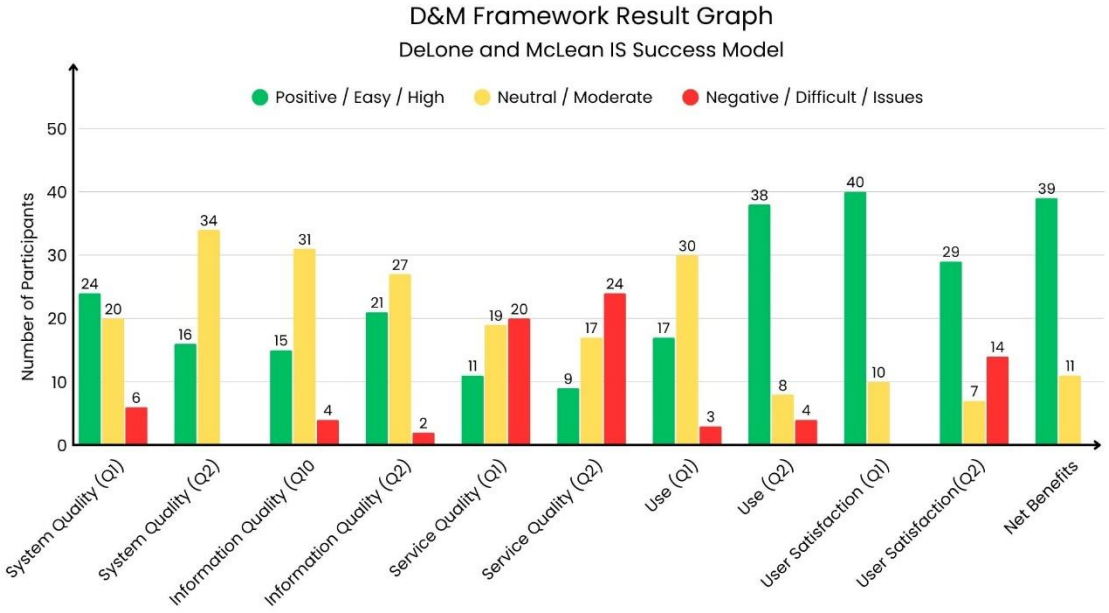

Figure 5. D&M Model Framework Result Graph

Continuing with the D&M IS Success model, System Quality: Most respondents rated the Ring Fit Adventure system as quite reliable and able to function well. A total of 24 respondents gave positive feedback, stating that the system ran as planned without significant issues, while 20 respondents remained neutral. However, 6 respondents reported experiencing technical difficulties during use. In terms of response time, the majority felt that the system was able to respond quickly enough, with 16 respondents being very satisfied and 34 rating it as adequate; none gave negative feedback. This indicates that the overall system quality was good, even though some technical problems still occurred for certain users.

Information Quality: Results show a variety of perceptions regarding information quality. 15 respondents considered the feedback provided by the system to be accurate and relevant, while 31 respondents found it fairly accurate, although some doubts remained. However, 4 respondents stated that the feedback was not entirely accurate, particularly in detecting movement speed such as running. Additionally, regarding the clarity of the game's objectives, most respondents found the directions to be fairly clear, with 21 respondents expressing a positive view, 27 remaining neutral, and only 2 finding some details confusing. Overall, the information provided was considered useful and relevant, although technical accuracy remains important.

Service Quality: The quality of service or support received by respondents showed varied results. 11 respondents rated the support they received as good, while 19 found the support available but unremarkable. However, 20 respondents stated that they did not receive adequate help. Regarding additional content, only 9 respondents noted beneficial updates or new content, 17 were neutral, and 24 saw no benefits from the additional content. This suggests that aspects of service and content variety require more attention to improve user satisfaction.

Use: In terms of usage, most respondents intended to use Ring Fit consistently, although with different frequencies. 17 respondents stated that they would feel more motivated to exercise with Ring Fit, while 30 tended to be neutral, possibly using it for just a few minutes a day. Only 3 respondents were unsure whether

they would continue using the device. Interestingly, regarding inspiration for increased exercise 38 people felt that Ring Fit could encourage physical activity, 8 people were neutral and 4 people felt that its influence was not significant.

User Satisfaction: User satisfaction with the Ring Fit Adventure system was very high. 40 respondents reported being satisfied, 10 were neutral, and none gave a negative rating. 29 Respondents also highlighted that Ring Fit's main advantage was its ability to make exercise more enjoyable and provide clear movement guidance. 7 people were neutral. However, 14 people also pointed out drawbacks, such as the potential for cheating movements, which could make the workout less effective and lead to injury. This shows that, despite some limitations, user satisfaction with Ring Fit was very good.

Net Benefits: In terms of net benefits, most respondents felt Ring Fit Adventure made a positive contribution to their fitness and physical health. 39 respondents stated that the system was very likely to improve their physical health, while 11 remained neutral. No respondent reported any negative effects. This reinforces the view that using Ring Fit has a positive real impact on health, although there is still room for improvement in the technical aspects and content.

2. Discussion

Recent research increasingly highlighted the role of SRL mechanisms in exergaming, emphasizing how goal setting, feedback, and adaptive challenges promote autonomous learning and sustained motivation. Studies over the last five years have demonstrated that exergames incorporating SRL elements such as performance tracking, progress monitoring, and personalized feedback significantly improve users' engagement, self-monitoring, and adherence to physical activity. For example, Chow & Mann (2023) proposed an educational framework linking exergame design to learning outcomes and motivation, showing that goal-oriented game structures encourage reflective practice and self-directed improvement. Similarly, Zhao et al. (2024) found through a large-scale meta-analysis that exergames integrated into physical education enhanced both physical performance and learning engagement by promoting iterative goal-setting and feedback cycles. Complementary findings by Müller et al. (2025) demonstrated that consistent exergame play improved cognitive load management and focus, which are key aspects of self-regulation and sustained learning. The motivational and behavioral benefits of such games are further supported by Hoffmann et al. (2025), who reported that exergames enhance intrinsic motivation and physical engagement through feedback-driven progression systems. The current findings aligned with this growing evidence, participants in this study not only perceived Ring Fit Adventure as beneficial for fitness but also reported increased motivation and self-directed persistence during gameplay. These results suggest that Ring Fit Adventure successfully integrates educational and behavioral design principles, fostering self-regulation through interactive feedback and progressive goal structures, consistent with recent frameworks emphasizing gamified self-learning environments in exergame design.

2.1. Implications

By applying the Technology Acceptance Model (TAM) and the DeLone and McLean IS Success Model (D&M), the study found that participants viewed the device as advantageous for exercise, easy to use, and enjoyable. These elements are vital for keeping users engaged. A significant number of participants indicated their readiness to recommend and continue using the device, showing a strong inclination towards adoption. Although challenges related to cost, navigation, and technical precision were noted, they did not greatly affect the overall positive perception. From the D&M viewpoint, the system is considered successful due to its dependability, responsiveness, and capacity to promote exercise, though enhancements in user support and content diversity are needed. Beyond their practical implications, these findings also hold educational significance. The perceived usefulness and ease of use identified through TAM, along with the system and information quality evaluated in D&M, underscore key design principles for interactive educational media. According to SRL theory, effective interactive learning systems should enable users to plan, monitor, and reflect on their progress. Exergames such as Ring Fit Adventure accomplish this through features such as goal-setting, immediate performance feedback, progress tracking, and adaptive difficulty levels, which are core SRL components that enhance autonomy and motivation. These design principles suggested that interactive educational technologies should incorporate real-time feedback, goal visualization, and adaptive challenges to foster learners' metacognitive awareness and sustain engagement. Overall, the study supports the idea that exergaming can be both an enjoyable and effective way to encourage gamers to participate in physical activity, offering entertainment, health, and educational benefits. By tapping into gamers' interest in interactive environments, devices like Ring Fit Adventure not

only promote active lifestyles but also demonstrate how self-regulated, game-based learning environments can be crafted to motivate and maintain user engagement across both physical and cognitive domains.

2.2. Research Contribution

Theoretical Contribution: This study enhances the understanding of exergame acceptance by merging two theoretical models: the TAM and the DeLone and McLean Information Systems Success Model (D&M). While earlier studies mainly concentrated on the benefits of exergaming for rehabilitation and physical activity, this study specifically investigated its use among individuals with obesity. By applying both TAM and D&M, this study provides a thorough view of the factors affecting user engagement, such as system usefulness, ease of use, quality, and user satisfaction. Additionally, this study adds to educational technology theory by illustrating how TAM and D&M constructs intersect with self-regulated learning principles. The aspects of perceived usefulness and system quality correspond to the SRL dimensions of goal setting and strategic monitoring, while ease of use and satisfaction relate to self-efficacy and motivational regulation. This integration creates a conceptual link between information systems research and educational psychology, indicating that user acceptance models can guide the design of interactive learning environments that promote learner autonomy, persistence, and self-monitoring.

Practical Contribution: Practically, this study shows that the Nintendo Ring Fit Adventure is user-friendly, enjoyable, and motivating, making it a feasible alternative to traditional exercise. Game developers can use these findings to improve sensor accuracy, expand the content, and enhance user support, thereby boosting engagement. More broadly, insights from TAM and D&M can guide the design of interactive educational media, focusing on usability, feedback, and motivational scaffolding. Health professionals and educators can incorporate these features into digital learning systems to maintain user motivation and encourage behavioral changes. Policymakers should integrate gamified fitness programs into broader public health and educational initiatives to promote lifelong learning and healthy lifestyles.

Methodological Contribution: This study combines observational data with structured interviews using the TAM and D&M frameworks, offering a detailed analysis of user experiences. Through purposive sampling of obese gamers, this study uncovered diverse acceptance patterns. The design, which includes real-time gameplay, adds a practical aspect often missing in purely survey-based studies This mixed-method approach enhances the validity and depth of findings while providing a valuable model for future studies exploring technology acceptance in interactive and self-regulated learning contexts.

2.3. Limitations

This study has several limitations. First, the sample consisted of only 50 students from Universitas Internasional Batam, which may limit the applicability of the results to larger populations. Additionally, the study focused solely on one exergame, the Nintendo Ring Fit Adventure, which prevented comparisons with other exergaming platforms that could show different acceptance trends. There were also technical issues, particularly with the foot motion sensor, which sometimes affected gameplay accuracy and could have impacted user perception. Moreover, the study did not include quantitative assessments of physical changes, such as weight loss, improved fitness, or other health metrics, leaving the actual physiological effects of exergaming on obesity unmeasured. Finally, financial constraints limited access to multiple devices, a wider participant pool, and longer observation periods, which may have hindered the ability to perform more thorough analyses.

2.4. Suggestions

To improve the generalizability of the results, future studies should focus on increasing the sample size and including participants from various demographic and cultural backgrounds. Longitudinal studies are recommended to explore the long-term effects of exergaming on physical health, motivation, and behavioral changes over time. Future studies hould also incorporate quantitative evaluations of physical enhancements, such as alterations in body composition or fitness levels, to assess the specific health benefits of exergaming interventions. Comparative studies examining different exergames or platforms could provide valuable insights into which design features most effectively encourage user acceptance and adherence. Additionally, follow-up assessments after the study's completion are suggested to evaluate the persistence of user motivation and behavioral changes, particularly in relation to exergaming's potential as a gamified educational tool. Further research should consider technical advancements, especially in the accuracy of motion sensors and system responsiveness, to ensure a more seamless user experience. Moreover, obtaining increased financial backing would allow researchers to utilize more advanced equipment, attract larger participant groups, and perform more thorough analyses. These efforts will help

establish stronger evidence regarding the role of exergaming in addressing obesity and promoting healthier lifestyles.

D. Conclusion

This study explored how gamers accept Nintendo's Ring Fit Adventure as both an exergaming and a gamified learning tool by employing the TAM and DeLone and McLean's Information Systems Success Model (D&M). The findings indicated that the participants perceived the game as highly advantageous, user-friendly, and enjoyable, with the majority expressing satisfaction and a desire to continue using it. The combination of captivating gameplay, straightforward instructions, and physical interactivity fosters motivation and positive emotional reactions. Although some minor technical issues, such as sensor accuracy, were observed, they did not significantly affect the users' overall perceptions. The integration of TAM and D&M offered a thorough understanding of how perceived usefulness, ease of use, and system quality affect user engagement, while SRL theory emphasized how Ring Fit Adventure encourages goal setting, monitoring, and reflection.

The study highlighted that Ring Fit Adventure successfully combines fitness with entertainment, making it an effective tool for encouraging physical activity and motivation among users. Its design fosters autonomy, enjoyment, and sustained engagement, demonstrating how exergames connect technology, education, and health. These results indicated that exergaming is a promising innovative strategy for addressing obesity and enhancing learning through interactive, self-directed, and health-focused experiences.

E. Acknowledgment

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F. Author Contribution Statement

FA and EMHT contributed equally to the drafting of the manuscript, experiment design and setup, data collection, equipment preparation, and tons of revisions. EMHT was responsible for processing the experimental results using the TAM, while FA analyzed the results using the DeLone and McLean (D&M) model. Both authors collaborated in integrating the findings from both research methods into a unified conclusion. All authors approved the final version of the manuscript.

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