

Title

**Leveraging gamification for competitive advantage: An exploratory study in
South African manufacturing**

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Abstract

Gamification, defined as the application of game design principles in non-game contexts, has gained increasing attention as a strategy for enhancing workforce engagement, motivation, and performance. While widely studied in sectors such as education, marketing, and human resource management, its application in manufacturing, particularly in South Africa, remains underexplored. Given the ongoing challenges within the South African manufacturing sector, ranging from declining productivity and skills shortages to disengaged workforces, this study investigates the potential of gamification as a strategic tool for competitive advantage, through the insights of business leaders.

Using an exploratory qualitative research approach, this study examines leadership perceptions of gamification in South African manufacturing firms. Findings reveal that while gamification is recognised for its potential benefits, its adoption remains inconsistent, often limited to experimental or short-term initiatives rather than being fully embedded into business strategy. Key barriers include leadership uncertainty, cultural resistance, and misalignment with organisational priorities. However, findings suggest that successful gamification implementations are driven by strong leadership support, strategic alignment with business objectives, and an organisational culture that fosters engagement, ultimately enhancing workforce motivation and contributing to competitive advantage.

The study aligns with existing literature that highlights gamification's potential to improve motivation and engagement, but also challenges the assumption that adoption naturally progresses over time. Participants reflect a South African manufacturing sector that continues to treat gamification as an isolated experiment, lacking strategic alignment. This research contributes to the academic dialogue by contextualising gamification within the South African manufacturing sector, bridging the gap between theory and practice, and offering practical recommendations for overcoming adoption barriers.

Keywords

Competitive advantage, Engagement, Gamification, Manufacturing, South Africa

Plagiarism Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

23006022

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Abbreviations and Acronyms

4IR - Fourth Industrial Revolution

SDT - Self-Determination Theory

VRIN - valuable, rare, inimitable, and non-substitutable

RBV - Resource-Based View

ROI - Return on Investment

GMM - Gamification Maturity Model

SME - Small and Medium-sized Enterprise

KPI - Key Performance Indicator

KZN - Kwazulu-Natal

MDW - Mission-directed Work Teams

5S - Sort, Set in order, Shine, Standardise, Sustain

Chapter 1. Introduction to Research Problem

1.1 Background

The manufacturing sector in South Africa is a vital part of the nation's economy, contributing a significant proportion of 12.92% to the country's GDP and employing over 1.6 million people (12% of the labour force) (Statistics South Africa, 2024a). This sector is key to sustaining growth in the developing economy, which still grapples with a burgeoning skills gap, escalating unemployment and the increasing pace of technological innovation, which threatens to alter traditional manufacturing processes (Statistics South Africa, 2023; PricewaterhouseCoopers, n.d.). Recent data highlights the declining state of South African manufacturing. Industrial production in South Africa decreased by 1.2% in December 2024 compared to the previous year, reflecting a sustained downturn (Trading Economics, n.d.; Statistics South Africa, 2024b).

Being able to 'pivot' or adapt is an essential strategy to ensure South African manufacturing is not only able to use new technology and new ways of working to their benefit, but to sustain their contribution to the economy. In a report published by PricewaterhouseCoopers (n.d.), Vinesh Maharaj, PwC South Africa's Smart Manufacturing Lead expressed that,

“New technologies are changing the face of manufacturing. Factories are becoming increasingly connected, as machines talk to one another and to humans, and automation reaches new milestones with robots becoming more independent. This has understandably left groups of employees jittery over 4IR's impact on job security and changing roles.”
(PricewaterhouseCoopers, n.d., para 2)

Within this context, gamification, the application of game-design elements in non-game contexts, has emerged as a potential strategy to enhance engagement, motivation, and performance within organisations (Keepers et al., 2022; Patrício et al., 2018; Robson et al., 2015). While authors like Bhutani and Behl (2023) and Hughes and Lacy (2016) have labelled gamification as a buzzword, others like Thibault and Hamari (2021) and Oe et al. (2020) find merit in its use in various contexts such as learning institutions, marketing and recruitment and have linked it to motivation, employee engagement and overall business performance (Keepers et

al., 2022; Patrício et al. , 2018; Nacke & Deterding, 2017; Schmidt, Manske & Flatten, 2023).

In the manufacturing sector in particular, gamification can transform traditional processes, at both an inter- and an intra-organisational level, making them more interactive and appealing (Keepers et al., 2022; Patrício et al. , 2018). Despite its widespread adoption in other fields, the application of gamification in manufacturing, especially within the South African context, remains underexplored (Keepers et al., 2022; Keepers et al., 2020). This study aims to explore the use of gamification in the South African manufacturing sector, focusing on its role in enhancing competitive advantage.

1.2. Research Problem

Although gamification has been widely studied in contexts such as education, marketing, and human resource management, studies around its specific application within manufacturing remains limited (Keepers et al., 2022; Patrício et al., 2021; Warmelink et al., 2020; Jacob et al., 2022). In South Africa, where manufacturers struggle with labour productivity, high turnover, and skill shortages, gamification presents a potentially valuable but under-researched solution (Zondo, 2020; Warmelink et al., 2020).

Skelton et al. (2020) highlight the importance of employee engagement and job retention in maintaining productivity in manufacturing. However, while traditional approaches to engagement have been explored, the potential role of gamification in manufacturing remains under-researched (Keepers et al., 2022; Keepers et al., 2020). This study seeks to investigate how gamification can be leveraged to improve engagement, retention, and competitive advantage in the South African manufacturing sector.

This research aims to address this gap by exploring the adoption, perception, and influence of gamification in South African manufacturing firms, thereby examining its potential to drive competitive advantage. By identifying the conditions necessary for successful implementation, the study will provide practical insights for manufacturing leaders seeking innovative strategies to boost workforce engagement and performance.

1.3. Purpose Statement

This qualitative research study explores the use of gamification in the South African manufacturing sector, focusing on its adoption and its role in enhancing competitive advantage. The study investigates how gamification is currently being used in South African manufacturing firms, uncover the perceptions of employees and managers, identify the barriers and enablers of gamification implementation, and understand the impact of gamification on organisational performance and competitive advantage.

1.4 Research significance

1.4.1 Business significance

This research holds practical relevance for South African manufacturing firms seeking innovative strategies to enhance workforce motivation, operational efficiency, and overall competitiveness. Given the decline in labour productivity within manufacturing and the 1.2% drop in industrial production as of December 2024, understanding the factors influencing workforce engagement is critical (Zondo, 2020; Trading Economics, n.d. Statistics South Africa, 2024b).

South African manufacturers face persistent challenges such as high turnover rates, skills shortages, and workforce disengagement (Zondo, 2020). Employee retention has been identified as a key factor influencing operational efficiency and business sustainability, as turnover can lead to increased hiring costs, lost productivity, and reduced employee morale (Skelton et al., 2020). Addressing these challenges requires innovative workforce engagement strategies, and gamification presents an opportunity to enhance motivation and employee commitment (Patrício et al., 2018; Patrício et al., 2021 Patrício et al., 2022; Rahiman et al., 2023).

1.4.2 Academic significance

This study contributes to a broader academic discourse on gamification in manufacturing, addressing the gap in existing literature by focusing on the current state of gamification adoption in South Africa. While gamification has been explored in various industries, its specific implementation, barriers, and enablers within the South African manufacturing sector remain under-researched (Keepers et al., 2022; Patrício et al., 2018; Keepers et al., 2020). By identifying the challenges and opportunities that shape gamification's effectiveness in this sector, this research provides new insights into the practical and contextual factors influencing its adoption.

Chapter 2. Literature Review

This chapter examines the existing body of research on gamification, particularly its application within the South African manufacturing sector and its potential role in enhancing competitive advantage. Further, it critically engages with existing research on gamification, employee motivation, organisational culture, leadership support, competitive advantage and its application within the manufacturing industry. These lay the foundation for understanding the challenges and opportunities of integrating gamification into a sector that is increasingly embracing new technologies and innovative systems.

This chapter is organized around several key themes that align with the central research questions of this study: the current use of gamification within South African manufacturing firms, the perceptions of gamification, the barriers and enablers to effective implementation, and the role of gamification in driving competitive advantage. These themes are explored through an examination of relevant theories and studies, including Self-Determination Theory (SDT), Resource-Based View (RBV), and other relevant models, which provide insights into the key questions of this study.

2.2 Gamification: Definition, Evolution, and Key Concepts

2.2.1 What is Gamification?

Gamification, commonly defined in the literature using Deterding et al.'s (2011) definition, as the integration of elements from game design into non-game contexts, has emerged as a promising strategy in various industries (Patrício et al., 2018; Seaborn & Fels, 2015; Robson et al., 2016; Keepers et al., 2022; Anuradhani et al., 2024). The concept leverages motivational aspects from games, such as rewards and challenges, to drive engagement and improve task performance (Nacke & Deterding, 2017; Schmidt et al., 2023; Keepers et al., 2022; Anuradhani et al., 2024).

The primary goal of gamification is to leverage game mechanics such as points, leaderboards, badges, levels, and rewards to encourage desired behaviours in users (Hallifax et al., 2023; Latino et al., 2023). These elements are incorporated into daily tasks to create an engaging environment where users, or employees in the case of business applications, feel motivated to participate and achieve their goals (Schmidt et al., 2023; Hallifax et al., 2023; Latino et al., 2023). Points are typically used to track progress, while leaderboards introduce competition by ranking users based on their performance. Badges are awarded as a form of recognition for accomplishments,

and levels represent the progression of a user's journey, offering incremental goals to strive for (Deterding et al., 2011; Hallifax et al., 2023; Latino et al., 2023).

For business purposes, gamification has been used to enhance employee productivity, drive customer engagement, and improve training programs (Anuradhani et al., 2024; Latino et al., 2023). Industries such as manufacturing, finance, education, and healthcare have embraced gamification strategies to foster participation, increase efficiency, and improve user experience (Keepers et al., 2022; Hallifax et al., 2023). However, its application in the manufacturing sector remains relatively underexplored (Keepers et al., 2022; Keepers et al., 2020). As manufacturing firms face unique challenges related to engagement, productivity, and technological adoption, gamification presents an innovative solution that could address these issues and provide a competitive edge (Patrício et al., 2021; Patrício et al., 2022; Rahiman et al., 2023).

In the context of manufacturing, the adoption of gamification remains in its early stages, with many organisations exploring its potential to improve employee performance and align behaviours with business goals (Keepers et al., 2022; Patrício et al., 2021; Jacob et al., 2022). However authors note that the successful implementation of gamification hinges on several key factors, such as organisational culture, leadership support, and alignment with overall business strategy (Hamari et al., 2014; Schmidt et al., 2023; Jacob et al., 2022).

Gamification relies on several key components, which are designed to make work processes more engaging and rewarding:

- **Points:** Employees accumulate points for completing tasks or achieving milestones, providing real-time feedback on their progress (Keepers et al., 2022; Hallifax et al., 2023; Latino et al., 2023).
- **Badges:** Visual representations of achievements or milestones, offering recognition and fostering a sense of accomplishment (Keepers et al., 2022; Schmidt et al., 2023; Robson et al., 2015; Robson et al., 2016; Hallifax et al., 2023; Latino et al., 2023).
- **Leaderboards:** A ranking system that compares individual or team performance, encouraging friendly competition and motivating employees to perform better (Keepers et al., 2022; Hallifax et al., 2023; Latino et al., 2023).

- **Levels:** A progression system that allows employees to 'level up' based on their achievements, creating a sense of growth and advancement (Keepers et al., 2022; Hamari et al., 2014; Hallifax et al., 2023; Latino et al., 2023).
- **Rewards:** Tangible incentives, such as prizes or recognition, provided for achieving specific goals, which enhances motivation to perform (Schmidt et al., 2023; Nacke & Deterding, 2017; Hallifax et al., 2023; Latino et al., 2023).

While gamification can be implemented without digital tools, the integration of digital technologies such as mobile apps or online platforms further enhances its effectiveness by providing real-time feedback, tracking performance, and facilitating communication between employees and management (Robson et al., 2015; Robson et al., 2016; Schmidt et al., 2023).

2.2.2 Theoretical Framework

The theoretical framework for this study rests on relevant theories to understand the role of gamification in achieving competitive advantage. These theories provide a comprehensive foundation for exploring how gamification can enhance organisational performance and competitive positioning.

Central to the concept of gamification are psychological and motivational theories, which explain how game-design elements influence user behaviour, with SDT as a core framework often applied in gamification research (Nacke & Deterding, 2017; Hallifax et al., 2023; Seo et al., 2021). In addition to SDT, the Octalysis Framework, developed by Chou (2019) offers a comprehensive model for understanding gamification by categorizing motivation into eight core drives (Costa et al., 2017; Putri Septiani & Rosmansyah, 2021). These drives, which include factors like epic meaning and calling, development and accomplishment, empowerment, and social influence, provide a structured approach to enhancing employee engagement through both intrinsic and extrinsic motivators.

Studies suggest that when these needs are met, individuals experience intrinsic motivation, leading to higher engagement and sustained behavioural change (Keepers et al., 2022; Staller & Koerner, 2021). Seo et al. (2021) highlight that gamification in industrial settings is more effective when it incorporates narrative persuasion elements, which help workers connect with gamified systems on a deeper level, fostering self-directed motivation and behavioural change.

Motivation in gamification is classified into intrinsic and extrinsic motivation (Deci & Ryan, 2000; Anuradhani et al., 2024). Intrinsic motivation refers to engaging in an activity for its inherent satisfaction, for example, the joy of mastering a challenge. Extrinsic motivation arises from external rewards, for example, earning points or badges. The most effective gamification strategies blend intrinsic and extrinsic motivators, ensuring that users transition from being driven by external incentives to deriving personal satisfaction from the activity itself (Hallifax et al., 2023; Staller & Koerner, 2021).

Elements like points, leaderboards, and badges are typically extrinsic motivators designed to drive performance by offering tangible rewards. However, when implemented thoughtfully, gamification can also enhance intrinsic motivation by fostering feelings of autonomy, competence, and relatedness, three psychological needs identified by SDT (Deci & Ryan, 2000; Ryan & Deci, 2000; Seo et al., 2021). For example, providing employees with real-time feedback through gamified systems can enhance their sense of competence, while incorporating team-based activities can satisfy their need for relatedness (Nacke & Deterding, 2017; Seo et al., 2021; Zhang et al., 2021).

Furthermore, research by Deterding et al. (2011) highlight how the strategic use of gamification can cater to both intrinsic and extrinsic motivations, thereby promoting a balanced approach to engagement. This theory-based approach to gamification ensures that employees are not merely motivated by rewards but are also empowered to feel competent and connected within the organisation (Patrício et al., 2021). The integration of gamification in manufacturing settings, such as through performance tracking and team-based goals, can enhance both individual and collective motivation, thus improving overall performance and contributing to a competitive advantage (Schmidt et al., 2023).

Gamification also draws from Nudge Theory, which suggests that small, subtle interventions can significantly influence behaviour without coercion (Staller & Koerner, 2021). Elements of gamification such as progress bars, social proof (seeing others participate), and competition mechanics are designed to gently guide users toward desired behaviours (Hallifax et al., 2023; Latino et al., 2023). For example, in manufacturing companies, gamified dashboards are used to provide real-time performance tracking, nudging employees to improve productivity (Keepers et al.,

2022). Similarly, in education, gamification enhances learning retention by offering incremental challenges and immediate feedback (Anuradhani et al., 2024).

The social aspects of gamification are equally important in driving motivation. Leaderboards, multiplayer challenges, and team-based rewards leverage social influence to encourage participation (Hallifax et al., 2023; Latino et al., 2023; Zhang et al., 2021). Social comparison theory suggests that individuals are motivated when they perceive themselves in competition with others, making leaderboards and ranking systems particularly effective (Zhang et al., 2021).

Additionally, gamification may draw on goal-setting theory, which states that clear, structured goals improve motivation and performance (Keepers et al., 2022). Progress indicators such as achievement badges and progress tracking reinforce this by making objectives visible and attainable (Hallifax et al., 2023).

These elements, when integrated into gamified systems, can help fulfil employees' basic psychological needs, thereby increasing intrinsic motivation and enhancing overall engagement (Nacke & Deterding, 2017). By fostering these conditions, gamification can enable manufacturers to retain a competitive edge by ensuring a more engaged workforce, which aligns with the RBV's emphasis on unique capabilities (Baia et al., 2020). By leveraging game design elements, manufacturers can foster a culture of continuous improvement and high efficiency (Keepers et al., 2022; Liker, 2021).

However, the literature suggests that while gamification can significantly enhance motivation, the design and implementation of these systems must align with organisational culture and objectives (Schöbel et al., 2020; Rahiman et al., 2023). The overuse of extrinsic motivators, such as reward systems, for example, may lead to negative outcomes, such as burnout or disengagement if not carefully managed (Schöbel et al., 2020; Dah et al., 2024). Dah et al. (2024) caution that simplistic reward-driven may create temporary engagement spikes but often fail to generate sustained behavioural change. Additionally, creating a balanced gamification strategy that resonates with employees' intrinsic needs is essential for long-term success (Patrício et al., 2021).

2.3 Gamification in Business: Application and Strategic Impact

This section examines the practical applications of gamification in business, focusing on its impact on employee engagement, learning and development, business

performance, and the challenges associated with implementation. While [Section 2.2](#) established the theoretical foundations of gamification, this section shifts towards its application, measurement, and risks in business settings.

2.3.1 Business Applications of Gamification

Gamification has been widely adopted across various industries, including manufacturing, finance, healthcare, education, and customer service, to enhance engagement, efficiency, and business outcomes (Patrício et al., 2018; Keepers et al., 2022; Schmidt et al., 2023). Burke (2016) argues that organisations are facing an engagement crisis, where traditional methods struggle to capture the attention of employees, customers, and stakeholders. In manufacturing, gamification has been used to optimise workflows, increase productivity, and foster a more engaged workforce (Keepers et al., 2022; Leite et al., 2023).

Many firms have implemented gamified performance dashboards to provide real-time feedback, allowing employees to track their output, efficiency, and progress toward production goals (Hallifax et al., 2023). In production environments, skill-based progression systems, where employees earn badges and certifications for demonstrating proficiency in key skills, have been introduced to encourage professional growth (Schmidt et al., 2023; Latino et al., 2023; Leite et al., 2023). Gamification aligns with lean production by motivating employees to engage in continuous improvement and waste reduction efforts. By integrating gamified systems with lean metrics, such as OEE and quality control, firms can enhance employee engagement and drive operational efficiency (Leite et al., 2023; Liker, 2021).

Incorporating gamification into team-based performance structures has been particularly beneficial in fostering collaboration (Patrício et al., 2022; Riar et al., 2022). Some manufacturing firms have adopted team-based gamification models, where collective scores are used instead of individual metrics to encourage cooperation rather than unhealthy competition (Schuldt & Friedemann, 2017; Ulmer et al., 2020). This ensures that the focus remains on overall productivity rather than individual performance, reducing the risk of workplace rivalry.

Younger employees are more receptive to gamification due to their familiarity with digital technologies, while older employees often view it as unnecessary or disruptive (Çera et al., 2022; Koivisto & Malik, 2021). In manufacturing, this generational divide is significant, with younger workers engaging more with leaderboards and real-time

feedback, whereas older employees prefer structured, goal-oriented incentives (González-González et al., 2022). To improve adoption, gamification must accommodate different learning styles and digital readiness across generations.

Beyond manufacturing, gamification has been widely applied in corporate training programs to enhance knowledge retention and employee development. Many organisations use gamified learning platforms that integrate progression systems, interactive challenges, and rewards to reinforce learning (Robson et al., 2015; Robson et al., 2016; Schmidt et al., 2023). Microlearning strategies, where employees complete short training modules and earn recognition through achievements, have proven effective in improving retention rates and knowledge application (Putri Septiani & Rosmansyah, 2021; Alias & Razak, 2024; Trevors & Ladhani, 2022). Companies have incorporated gamified elements into onboarding programs as well to help new employees understand organisational structures and policies while maintaining engagement (Kirovska et al., 2020).

Gamification has also been instrumental in promoting innovation and knowledge sharing within organisations (Patrício et al., 2022; Werbach & Hunter, 2020). Businesses have implemented innovation challenges, rewarding employees for contributing ideas that enhance operations or improve efficiency (Patrício et al., 2018; Patrício et al., 2022; Schmidt et al., 2023). Additionally, knowledge sharing platforms with gamified incentives have encouraged employees to document and exchange best practices, ensuring that institutional knowledge is preserved and transferred effectively (Ulmer et al., 2020).

Literature shows that gamification has been used when considering customer engagement as it has been leveraged to enhance brand loyalty and user experience (Lu & Ho, 2020; Punwatkar & Veghese, 2025). Many businesses have implemented reward-based loyalty programs, where customers accumulate points, earn badges, and participate in challenges in exchange for exclusive incentives (Huotari & Hamari, 2012; Lu & Ho, 2020; Punwatkar & Veghese, 2025). The financial services sector has incorporated gamification into banking applications, using interactive challenges and financial literacy games to improve customer engagement and responsible financial behaviour (Çera et al., 2022; Chauhan et al., 2021; Zhang et al., 2021).

2.3.2 Gamification for Employee Development and Organisational Learning

The impact of gamification on employee motivation is well-documented, with research indicating higher retention rates and enhanced knowledge transfer in

environments where gamification is embedded into training programs (Schmidt et al., 2023; Alias & Razak, 2024; Trevors & Ladhani, 2022). Employees who participate in gamified performance management systems are more likely to remain engaged, as these systems link performance recognition with tangible incentives (Keepers et al., 2022; Kirovska et al., 2020; Korn, 2022). Moreover, gamified team-based collaboration tools have been introduced to enhance problem-solving capabilities and teamwork, ensuring a more dynamic workplace environment (Schmidt et al., 2023; Riar et al., 2022). The integration of structured feedback loops in gamified learning enhances knowledge reinforcement by allowing employees to track their progress and identify areas for improvement (Hallifax et al., 2023).

Organisations have adopted gamification to cultivate a culture of continuous learning (Ulmer et al., 2020; Paravizo et al., 2018). Gamified knowledge sharing platforms facilitate collaboration by incentivising employees to share insights and best practices. Companies have introduced internal gamification initiatives that reward employees for contributing knowledge to internal databases, ensuring that expertise is systematically documented and disseminated across teams (Ulmer et al., 2020). Paravizo et al. (2018) provide further evidence that gamification fosters an innovation-driven knowledge sharing culture, highlighting how gamification strategies can be embedded into knowledge sharing platforms to enhance employee collaboration, facilitate idea generation, and improve organisational learning capabilities. This supports the argument that gamification contributes to competitive advantage by strengthening a firm's intellectual capital and fostering an agile learning environment.

Gamification is also widely used in employee performance management. Organisations leverage performance-based gamification to track employee productivity and provide structured feedback, reinforcing positive behaviours and identifying areas where improvement is needed (Patrício et al., 2021). Gamification enables the linking of incentives to performance, ensuring that employees remain engaged in their professional development while reducing dependence on financial rewards alone (Korn, 2022; Kirovska et al., 2020).

2.3.3 Gamification and Business Performance Metrics

To evaluate the effectiveness of gamification, organisations use key performance indicators (KPIs) that measure engagement, productivity, and financial return on investment (ROI). Businesses that have integrated gamified training platforms report higher training completion rates, increased knowledge retention, and lower

onboarding costs (Robson et al., 2015; Robson et al., 2016). In manufacturing, gamification has been linked to lower production error rates, improved process efficiency, and enhanced workforce morale (Hallifax et al., 2023; Leite et al., 2023).

Warmelink et al. (2020) suggests, the design and impact of gamification on the production floor need to be more rigorously explored, especially considering potential criticisms of gamification being coercive or exploitative. Thus, further research is necessary to understand how gamification can be optimally employed to enhance intrinsic motivation and organisational performance in production and logistics.

Based on these uses of gamification and its application in real time, gamification generates valuable data on employee performance, customer behaviour, and other key metrics. Analysing this data can inform decision-making, drive continuous improvement, and strengthen competitive advantage (Zichermann & Cunningham, 2011; Ulmer et al., 2020; Schuldt & Friedemann, 2017)

2.3.4 Challenges and Risks in Gamification Implementation

Despite its numerous benefits, gamification presents challenges that can hinder its success if not carefully designed and implemented. One common issue is employee resistance, particularly when gamification is perceived as a tool for micromanagement or excessive performance monitoring (Gupta et al, 2022; Schmidt et al., 2023). Some employees may feel pressured by constant tracking or perceive competition-driven gamification as stress-inducing rather than motivating, especially if leaderboards or ranking systems are overly competitive, leading to workplace stress and reduced collaboration (Schöbel et al., 2020; Seo et al., 2021).

Another significant challenge is the risk of short-term engagement rather than long-term behavioural change. If gamification relies too heavily on extrinsic rewards, such as points and prizes, employees may disengage once the novelty wears off or when rewards are no longer appealing (Hallifax et al., 2023; Dah et al., 2024). Dah et al. (2024) highlight risks, where organisations implement surface-level game elements without a clear purpose or long-term strategy, leading to disengagement once novelty fades. When rewards lack meaningful progression, employees question their value, resulting in low sustained participation. To prevent this, organisations should design gamification strategies that incorporate intrinsic motivators, such as personal development opportunities and meaningful recognition (Dah et al., 2024; Korn, 2022).

Ethical concerns surrounding gamification have also emerged, particularly in relation to data privacy and surveillance. Some gamified performance tracking systems monitor employees in real-time, raising concerns about workplace surveillance and data misuse (Leite et al., 2023; Wenker, 2022). Leite et al. (2023) highlight that the use of gamification systems often includes tracking worker performance, which, if not implemented transparently, can lead to discomfort and disengagement among employees. Employers must ensure that gamification frameworks respect ethical boundaries and are implemented in a manner that fosters motivation rather than coercion (Ulmer et al., 2020; Wenker, 2022).

The effectiveness of gamification also depends on its alignment with organisational culture. In culturally diverse workplaces, gamification strategies must be tailored to accommodate different motivational drivers and team dynamics (Abubakre et al., 2021; Chetty & Price, 2024). For instance, South African workplaces, where collaborative leadership models such as Ubuntu are prominent, may require gamification strategies that prioritise collective achievements over individual competition (Riar et al., 2022).

2.3.5 South African Manufacturing Sector

The South African manufacturing sector faces unique challenges, including economic volatility, labour issues, and technological gaps (Kahn, Sithole, & Buchana, 2022; Zondo, 2020). Keepers et al. (2022) advocate for further exploration of gamification's impacts in manufacturing, noting how gamification can enhance employee performance, motivation, and innovation within these organisations. The interplay of gamification, employee engagement, and innovation processes in manufacturing warrants thorough investigation (Patrício et al., 2021).

The South African manufacturing sector faces a critical juncture, highlighted by recent data, from a detailed 2021 survey (Statistics South Africa, 2023). This data provides a glance at the state of the industry, offering provincial- and district-level insights into employment, financial health, and production volumes. Over the past 16 years, the industry has experienced a significant decline in workforce numbers, losing almost 309,000 jobs since 2005, with a notable dip to 1.09 million employees in 2021, exacerbated by the COVID-19 pandemic (Statistics South Africa, 2023).

Given these pressing issues, exploring innovative strategies like gamification to enhance employee engagement and competitive advantage is not just timely but

essential for the future resilience of the sector (Burke, 2016; Keepers et al., 2022; Leite et al., 2023). However, poorly designed gamification often leads to short-lived engagement, as organisations incorrectly apply it as a quick fix rather than a strategic tool (Burke, 2016; Patrício et al., 2021). Leveraging gamification to address these challenges and enhance competitive advantage requires a deep understanding of the local context and the specific needs of manufacturing firms in South Africa.

2.4 Gamification Maturity Model

Gamification, as an engagement strategy, has gained widespread application across various sectors, yet its systematic adoption remains inconsistent (Deterding et al., 2011; Seaborn & Fels, 2015; Hallifax et al., 2023; Keepers et al., 2022; Korn, 2022). To evaluate the extent to which gamification is embedded within organisations, maturity models provide a structured approach. Maturity models have been widely used in domains such as Industry 4.0, digital transformation, and lean manufacturing to assess organisational progression through structured phases (Amaral & Peças, 2021; Boer et al., 2013; Teichert, 2019; Thordsen & Bick, 2023).

These models categorize firms based on observable traits, offering a structured way to analyse trends and challenges (Amaral & Peças, 2021; Teichert, 2019; Boer et al., 2013; Thordsen & Bick, 2023). These models provide a framework for evaluating the development of gamification within South African manufacturing, serving as an analytical tool rather than a prescriptive framework for implementation.

While no universally accepted gamification maturity model (GMM) exists, some conceptual models provide useful reference points. Rackwitz (2024) introduced a GMM that outlines how organisations move from initial exploration to fully integrated, user-centric gamification approaches. This model draws from behavioural psychology and user experience (UX) design, emphasizing the shift from extrinsic to intrinsic motivation (Rackwitz, 2024). While Rackwitz's (2024) model is developed from a practitioner's perspective, it aligns with academic literature on user engagement, behaviour driven gamification, and intrinsic motivation (Deci & Ryan, 2000; Ryan & Deci, 2000). By synthesising these frameworks, this study presents a structured model to assess gamification maturity in organisations. Similarly, digital transformation and Industry 4.0 maturity models highlight the need for structured progression in technological and behavioural adoption (Amaral & Peças, 2021; Teichert, 2019; Thordsen & Bick, 2023).

Integrating these insights, this study proposes a GMM for South African manufacturing, tailored specifically to assess the level of gamification adoption in the sector. This model does not serve as an implementation guide but rather as an analytical tool to assess where firms stand regarding gamification use and maturity.

2.4.1 Basic Awareness

At this stage, organisations have minimal understanding of gamification, often seeing it as a passing trend rather than a business tool (Leite et al., 2023; Hallifax et al., 2023; Rackwitz, 2024). If gamification exists, it is used in isolated experiments, with no structured approach or leadership involvement (Hallifax et al., 2023).

Most organisations in this phase lack clear data on gamification's impact on engagement and performance (Leite et al., 2023). Leadership interest is often minimal, resulting in little investment in gamification strategies beyond basic engagement initiatives (Schmidt et al., 2023).

2.4.2 Early Adoption

In this stage, organisations begin experimenting with gamification, often implementing basic engagement mechanics such as leaderboards, rewards, and performance dashboards (Patrício et al., 2021; Rackwitz, 2024). These efforts are typically department-specific and lack a coordinated organisational strategy (Boer et al., 2013; Patrício et al., 2021).

Companies at this stage may introduce gamification in employee training, engagement programs, or compliance initiatives, but leadership remains cautious about scaling these efforts (Hallifax et al., 2023). While early results may show increased participation, these efforts often fail to translate into sustained motivation or cultural change (Schmidt et al., 2023).

2.4.3 Integrated Implementation

At this stage, organisations recognize gamification as a structured tool for employee engagement, training, and operational performance (Nacke & Deterding, 2017; Leite et al., 2023; Keepers et al., 2022; Rackwitz, 2024). Instead of treating gamification as a one-off initiative, companies actively integrate it into multiple departments, linking it to lean manufacturing, quality control, and continuous improvement initiatives (Schmidt et al., 2023; Leite et al., 2023).

Firms leverage gamification analytics to track participation, performance, and knowledge retention, and leadership actively invests in digital gamification platforms to improve adoption (Hallifax et al., 2023).

2.4.4 Strategic Alignment

At the highest level of maturity, gamification is fully embedded into business processes and corporate culture, driving productivity, learning, and innovation (Burke, 2016; Rackwitz, 2024). Organisations in this stage would not see gamification as an external tool but as an integral part of their strategy (Rackwitz, 2024).

Firms utilize AI-driven gamification analytics to continuously adapt engagement strategies, ensuring that gamification remains dynamic and relevant (Leite et al., 2023). Leadership prioritizes gamification-driven decision-making and fosters a culture of innovation, where engagement is sustained by intrinsic motivation rather than external rewards (Schmidt et al., 2023).

2.4.5 Visual representation of the Gamification Maturity Model

Figure 1 below, adapted from Hallifax et al. (2023), Burke (2016), Patrício et al. (2018), Amaral & Peças (2021), Teichert (2019), Thordsen & Bick(2023) and Rackwitz, (2024) can be used to visually represent the Gamification Maturity Model(GMM):

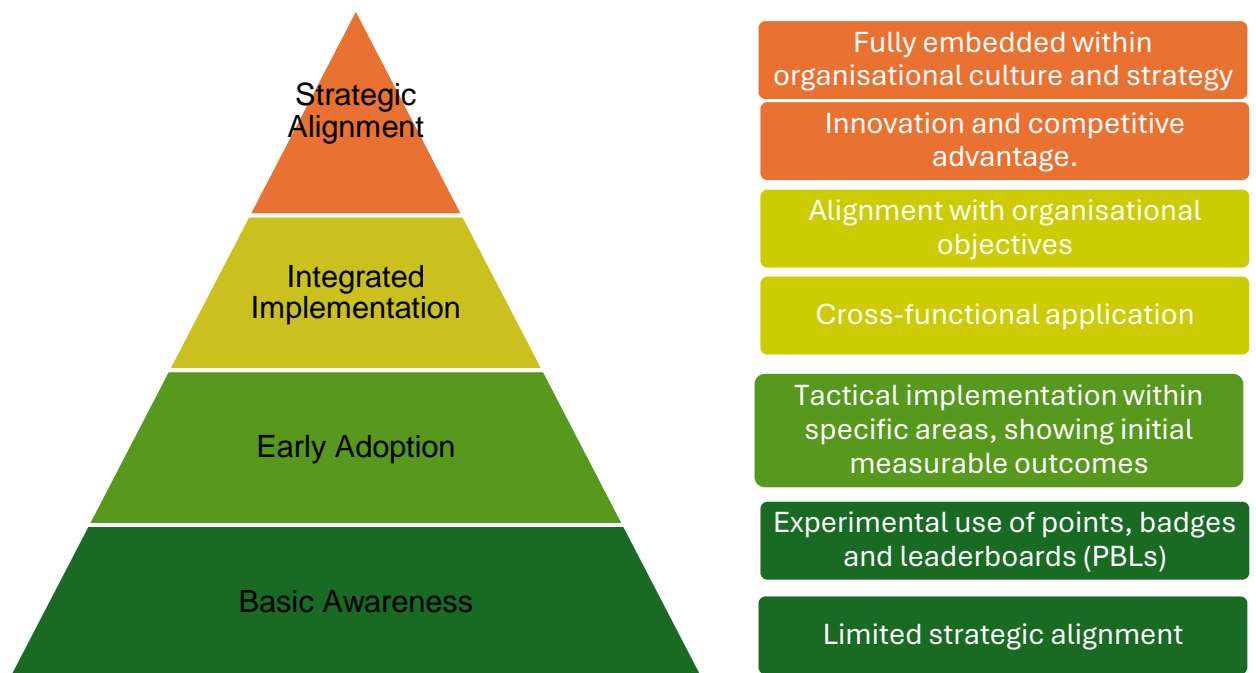


Figure 1 : Proposed gamification maturity model

2.4.6 Proposed Gamification Maturity Model

The GMM developed in this study addresses the need for a structured approach to assessing the adoption and integration of gamification within South African manufacturing organisations. This model provides a systematic method to categorize firms based on their level of gamification adoption, ranging from Basic Awareness to Strategic Alignment. It offers a means to analyse where South African manufacturers stand in their gamification journey, helping to identify barriers, enablers, and potential pathways for further integration.

By synthesising insights from digital transformation, behavioural psychology, and gamification frameworks (Amaral & Peças, 2021; Teichert, 2019; Thordsen & Bick, 2023; Rackwitz, 2024), the model ensures a comprehensive assessment of gamification's role in business strategy.

This model was applied to analyse the results of this study (see [chapter six](#)), to classify organisations based on their current level of gamification adoption, allowing for a clearer understanding of how gamification is perceived and implemented within South African manufacturing.

2.5 Barriers and Enablers of Gamification Implementation

While gamification has demonstrated potential in enhancing motivation, engagement, and operational efficiency, its implementation within manufacturing, particularly in the South African context, is not without challenges. Several barriers hinder its widespread adoption, ranging from organisational resistance and technical constraints to concerns over sustainability and long-term effectiveness (Gupta et al., 2022; Hamari et al., 2014; Patrício et al., 2021; Keepers et al., 2022; Korn, 2022).

Conversely there are a range of enablers can facilitate the successful implementation of gamification (Schöbel et al., 2020; Keepers et al., 2022; Leite et al., 2023; Riar et al., 2022). By examining barriers and enablers together, this section presents a balanced view that highlights both the obstacles to adoption and the factors that contribute to overcoming them. Some barriers can, in certain conditions, become enablers when specific factors are addressed, and vice versa, demonstrating the dynamic nature of gamification implementation.

2.5.1 Organisational and Cultural Factors

A notable barrier to gamification in manufacturing is organisational resistance, often stemming from a lack of awareness or understanding of its benefits (Dolly et al.,

2024; Gimenez-Fernandez et al., 2021; Korn, 2022). Managers and decision-makers may perceive gamification as an unnecessary or superficial addition rather than a tool that can enhance productivity and engagement (Patrício et al., 2021; Schmidt et al., 2023). This resistance is particularly evident in traditional manufacturing firms where hierarchical structures, rigid performance measurement systems and established processes dominate (Seo et al., 2021). There is also managerial scepticism in manufacturing in environments where efficiency and standardisation are prioritised over engagement, resulting in hesitation among leadership to invest in gamification initiatives that may disrupt traditional processes (Seo et al., 2021).

In the South African context, resistance to gamification is also influenced by indigenous cultural values, particularly Ubuntu, which emphasizes collective well-being, reciprocity, and shared success (Abubakre et al., 2021; Chetty & Price, 2024). Many gamification strategies are designed around individual achievement and competition, which may clash with a workplace culture that values collaboration and collective recognition over individual rewards (Riar et al., 2022). If gamification is perceived as undermining Ubuntu-based work principles, employees may resist participation or disengage from gamified initiatives.

However, organisational culture can also serve as an enabler if gamification is framed to align with existing workplace values. When leadership integrates gamification into a collaborative and inclusive culture, employees are more likely to perceive it as a tool for reinforcing team-based achievements rather than fostering unhealthy competition (Hallifax et al., 2023; Keepers et al., 2022; Riar et al., 2022). Addressing concerns and providing a structured approach that integrates gamification with cultural values can transform it from a point of resistance to an accepted and valued engagement tool (Hallifax et al., 2023; Riar et al., 2022).

2.5.2 Leadership Support and Strategic Alignment

Leadership commitment is essential for gamification success, yet its absence remains a key barrier. Many organisations struggle to secure buy-in from senior leadership due to a lack of understanding of how gamification contributes to broader business goals (Gupta et al, 2022; Buell et al., 2019; Gimenez-Fernandez et al., 2021). Without clear KPIs and measurable success metrics, gamification initiatives risk being perceived as short-term trends rather than sustainable business strategies (Schmidt et al., 2023; Dolly et al., 2024).

Simultaneously, leadership can be a primary enabler when it is actively involved in gamification initiatives. Leaders who champion gamification as a strategic tool and integrate it into long-term business planning help to ensure its adoption (Schmidt et al., 2023; Hallifax et al., 2023). When leadership communicates gamification's alignment with business objectives, employees are more likely to embrace it. Clear communication and structured implementation frameworks ensure gamification supports business goals rather than being seen as a disconnected engagement tactic (Deterding et al., 2011; Latino et al., 2023).

2.5.3 Technology and Infrastructure Readiness

The integration of gamification into manufacturing operations requires technical infrastructure and expertise, which many firms lack (Keepers et al., 2022; Dolly et al., 2024). Manufacturing environments often rely on legacy systems that are not designed to support real-time feedback mechanisms, leaderboards, or incentive-based tracking (Cao & Iansiti, 2022). This lack of technological compatibility can make implementation costly and complex (Keepers et al., 2022; Leite et al., 2023).

In South Africa, digital infrastructure gaps present an additional challenge, particularly in industrial zones where internet access and digital literacy vary significantly among employees (Guenther & Weingart, 2018). Older employees in manufacturing often resist gamification due to lower digital fluency and a preference for traditional engagement methods (Koivisto & Malik, 2021). Gamification platforms often rely on mobile applications, cloud-based dashboards, and real-time tracking, all of which require stable connectivity and technological proficiency. Employees with limited exposure to digital tools may struggle to engage with gamification, creating usability barriers rather than increasing engagement (Abubakre et al., 2021).

Conversely, technological readiness can be a significant enabler when organisations invest in infrastructure upgrades and training. Modern cloud-based platforms and mobile-friendly interfaces enable seamless gamification adoption (Schmidt et al., 2023; Dolly et al., 2024). Additionally, digital literacy programs can help bridge the knowledge gap, ensuring that all employees, regardless of their technical background, can engage effectively with gamification (Keepers et al., 2022; Hallifax et al., 2023).

2.5.4 Sustainability and Adaptability

A significant critique of gamification is its potential for diminishing returns over time (Keepers et al., 2022; Schmidt et al., 2023). Many gamification initiatives rely heavily

on extrinsic motivators, such as rewards and leaderboards, which may initially boost engagement but can lead to fatigue and disinterest if not supplemented with intrinsic motivational factors (Hallifax et al., 2023; Dah et al., 2024).

Sustainability concerns also extend to resource allocation. Developing and maintaining gamified systems require ongoing investment, and without continuous refinement and adaptation, these initiatives may fail to deliver long-term value (Schmidt et al., 2023; Anuradhani et al., 2024). If gamification efforts do not align with employee values and work culture, they risk being perceived as forced participation mechanisms, leading to disengagement rather than motivation (Gupta et al., 2022; Buell et al., 2019; Rackwitz, 2024).

However, gamification sustainability can be enhanced through continuous monitoring, adaptation, and employee feedback. Regular updates to game mechanics and periodic engagement assessments ensure that gamification remains relevant and appealing (Zichermann & Cunningham, 2011, Chou, 2019). Organisations that integrate gamification as an evolving strategy, rather than a fixed system, are more likely to sustain engagement and motivation over time (Keepers et al., 2022; Hallifax et al., 2023).

Furthermore, for gamification to be sustainable, it must cater to multiple generations in the workforce. Older employees may disengage if gamification relies too heavily on digital dashboards, while younger employees may lose interest if it lacks interactivity (Koivisto & Malik, 2021; Polo-Peña et al., 2021; Korn, 2022). Providing flexible engagement options, such as structured goal setting for older employees and real-time challenges for younger ones, can ensure long-term adoption (González-González et al., 2022).

2.6 Competitive Advantage in Manufacturing

Competitive advantage is defined as the ability of a company to create more economic value than its rivals, which can be achieved through delivering superior products or services, achieving lower costs, or creating a unique market position (Porter, 2008; Baia et al., 2020; Kryscynski et al., 2021; Zvarimwa & Zimuto, 2022). Competitive advantage strengthens a firm's market position, boosts profitability, and ensures long-term sustainability. Businesses with a strong competitive advantage are better positioned to respond to market changes, attract and retain customers, and achieve superior financial performance (Baia et al., 2020; Kryscynski et al., 2021; Zvarimwa & Zimuto, 2022).

The value and rareness of resources and capabilities are critical sources of competitive advantage and superior performance (Baia et al., 2020; Kryscynski et al., 2021; Zvarimwa & Zimuto, 2022). According to the RBV of the company, resources that are valuable, rare, inimitable, and non-substitutable (VRIN) can provide a sustainable competitive advantage. These resources allow firms to develop unique capabilities that competitors cannot easily replicate, leading to superior performance. The RBV posits that firms achieve competitive advantage by possessing and effectively utilising VRIN resources (Baia et al., 2020; Kryscynski et al., 2021). According to Baia et al. (2020), the value and rareness of resources and capabilities are critical sources of competitive advantage and superior performance. This theory underscores the importance of unique resources and capabilities in sustaining a firm's competitive edge.

2.6.1 Gamification and Competitive Advantage

Studies suggest that gamification can drive competitive advantage by enhancing employee engagement, fostering a culture of continuous improvement, and encouraging innovation (Patrício et al., 2018; Schmidt, Manske, & Flatten, 2023). For instance, gamification can motivate employees to participate in problem-solving activities, leading to innovative solutions and improved processes. However, to understand its full impact, it is crucial to differentiate between its effects at the firm level and on employee development and understand the specific mechanisms through which gamification contributes to competitive advantage in manufacturing.

Gamification has been shown to influence knowledge sharing behaviours and foster a knowledge-driven culture, as its integration into knowledge management processes enhances content creation, collaboration, and knowledge retention, ultimately strengthening employee competency and contributing to competitive advantage (Bahadoran et al., 2023; Paravizo et al., 2018). Additionally, firms implementing gamification as part of their organisational strategy can leverage it to drive continuous improvement, encourage employee participation, and optimise workforce productivity (Keepers et al., 2022; Schmidt et al., 2023; Rahiman et al., 2023).

The impact of gamification on competitive advantage can be seen through various mechanisms. First, gamification enhances employee skill development by making training more interactive and engaging, ensuring that employees acquire relevant competencies that contribute to improved operational efficiency (Keepers et al., 2022; Seo et al., 2021). Second, it fosters a culture of innovation by incentivising

employees to propose and refine ideas, which contributes to process improvements and cost savings (Schmidt et al., 2023; Keepers et al., 2022; Patrício et al., 2022; Werbach & Hunter, 2020). Third, gamification enables real-time performance tracking and data-driven decision-making, allowing firms to optimise workforce strategies based on engagement analytics and productivity metrics (Ulmer et al., 2020; Keepers et al., 2022; Bahadoran et al., 2023). Lastly, gamification strengthens collaboration by shifting incentives from purely individual competition to team-based problem-solving, fostering higher levels of coordination and cooperation (Schöbel et al., 2020; Patrício et al., 2022; Riar et al., 2022).

Competitive crowdsourcing has emerged as another mechanism through which gamification enhances competitive advantage. Yang et al. (2021) highlight that gamified reward structures enhance motivation in crowdsourcing environments by driving participation and solution generation, leading to innovative problem-solving. In the manufacturing sector, similar gamified approaches can be applied to continuous improvement programs, where employees compete and collaborate to identify and implement operational enhancements (Patrício et al., 2018; Patrício et al., 2022; Leite et al., 2023).

2.7 Conclusion

This chapter has critically reviewed the existing body of literature on gamification and its relevance within the manufacturing sector. Drawing from established frameworks such as Self-Determination Theory (SDT) and the Resource-Based View (RBV), the chapter has demonstrated how gamification influences organisational engagement, knowledge-sharing, and performance optimisation. Furthermore, it has explored how gamification aligns with key competitive advantage principles, particularly in manufacturing environments where employee motivation, continuous improvement, and innovation play a key role in sustaining firm success.

A Gamification Maturity Model(GMM) was formulated specifically for this study to provide a structured approach for assessing gamification adoption within South African manufacturing firms. Grounded in existing research on gamification and maturity models, this framework offered a method to contextualise the level of gamification integration across different firms.

Additionally, the chapter has examined the barriers and enablers of gamification implementation, acknowledging both the challenges, such as organisational resistance, technological constraints, and sustainability concerns, and the enablers,

such as leadership commitment, strategic alignment, and technological investment. The discussion on competitive advantage further reinforces the potential of gamification as a driver of firm-level differentiation and long-term performance.

This review has identified key gaps in the literature, particularly regarding the adoption and perception of gamification within South African manufacturing firms. While research exists on gamification in broader business and educational contexts, there remains limited studies focused specifically on its role in manufacturing, especially within the South African landscape. This gap underscores the need for further exploration to determine how gamification is currently perceived, implemented, and leveraged as a strategic tool.

Chapter 3. Research Questions

The key research question addressed by this study is how gamification is perceived, adopted and leveraged by the South African manufacturing sector and its role in enhancing competitive advantage. In order to respond to this question, and address the lacunae identified in the literature, the following research sub questions were explored:

1. How is gamification currently being used within South African manufacturing firms?

- This question examined the extent and nature of gamification adoption in the sector, identifying the ways in which firms had integrated gamification into their operations, training, and performance management systems.

2. What are the current perceptions of gamification among South African manufacturers?

- This question investigated how manufacturing leaders understood and evaluated gamification, exploring whether they viewed it as a strategic tool, an experimental initiative, or an unnecessary investment.

3. What are the barriers to and enablers of effective gamification implementation in South African manufacturing?

- This question sought to identify the factors that had hindered or facilitated gamification adoption, including leadership buy-in, organisational culture, resource constraints, and technological readiness.

4. How does gamification contribute to competitive advantage in the manufacturing sector?

- This question explored whether and how gamification had enhanced workforce engagement, productivity, and operational efficiency, positioning it as a potential driver of business performance and competitive differentiation.

By answering these questions, this study provides an understanding of gamification in South African manufacturing, offering insights that could inform business leaders and academics on the strategic value and practical application of gamification in the sector.

Chapter 4. Research Design & Methodology

4.1 Introduction

This chapter outlines the research design and methodology that were adopted to investigate the role of gamification on innovation within the manufacturing sector. The chapter details the purpose of the research design, research philosophy, research approach, methodological choices, research strategy, time horizon, and all other aspects of the study, from population and sampling methods to data gathering, analysis, quality controls, limitations, and ethical considerations. The chosen methods were intended to ensure rigorous, context-specific insights into how gamification was perceived and implemented by leaders in South African manufacturing organisations

4.2 Purpose of Research Design: Exploratory

The choice of an exploratory research design was established by the need to delve into the relatively uncharted territories concerning the role of gamification on innovation within the manufacturing sector (Korstjens & Moser, 2017; Saunders & Lewis, 2018). Patricio et al. (2020) and Keepers et al. (2022) have highlighted that the gamifications influence on manufacturing remains underexplored. An exploratory qualitative design was chosen because it allows for a deep understanding of complex phenomena within their real-life context (Saunders & Lewis, 2018).

4.3 Research Philosophy: Interpretivism

This study adopted an interpretivist philosophy, which emphasised understanding the subjective experiences and interpretations of individuals. Interpretivism was suitable for this research as it sought to understand the meanings and experiences of leaders in manufacturing organisations regarding gamification (Saunders & Lewis, 2018). This approach was suitable for exploring the nuanced and context-specific phenomena of gamification and its impact on competitive advantage in manufacturing (Korstjens & Moser, 2017; Saunders & Lewis, 2018; Campbell et al., 2020).

4.4 Research Approach: Inductive

An inductive approach was employed to develop insights and theories based on the empirical data collected from participants. This approach allowed for a deeper

understanding of the complex relationships between gamification, employee engagement, and competitive advantage (Saunders & Lewis, 2018). Additionally, this approach was appropriate for exploratory studies where the goal is to generate insights and build theory rather than test hypotheses (Saunders & Lewis, 2018, Andrade, 2021).

4.5 Methodological Choices: Mono Method

The decision to adopt a mono methodological approach, focusing solely on semi-structured interviews, allowed for a concentrated exploration of the research questions using a single, focused approach (Saunders & Lewis, 2018).

Alternative methods, such as quantitative surveys and mixed methods, were considered but ultimately rejected. Quantitative surveys were dismissed due to their limited capacity to capture the depth of participants' experiences and perceptions (Saunders & Lewis, 2018). Mixed methods, while offering comprehensive insights, were deemed overly complex and resource-intensive, potentially diluting focus and increasing the complexity of data integration (Saunders & Lewis, 2018). The mono-method approach allowed for a concentrated investigation of qualitative data, providing rich, detailed insights while maintaining methodological consistency and focus. However, it limited the study to a single perspective and does not benefit from the triangulation of data that mixed methods could offer. Future studies could benefit from a mixed-method approach to triangulate qualitative findings with quantitative data, such as employee engagement metrics, thus enhancing the reliability and depth of the analysis.

4.6 Research Strategy: Narrative inquiry

The research strategy for this study was narrative inquiry, which aimed to capture the stories, experiences, and perspectives of top leadership and senior management regarding their interactions with gamification strategies in the workplace. Narrative inquiry was particularly effective for exploring complex phenomena within organisational contexts and understanding the lived experiences of individuals with gamification initiatives (Korstjens & Moser, 2017; Saunders & Lewis, 2018). Campbell et al. (2020) argue that narrative inquiry provides a comprehensive understanding of how individuals interpret their experiences, which was crucial for this study's focus on top leadership and senior management's perspectives.

This study specifically focused on top leadership and senior management in the manufacturing sector, as their strategic decisions and leadership roles significantly influence the implementation and impact of gamification initiatives. By conducting semi-structured interviews with these leaders, the research sought to gain in-depth insights into their views and experiences with gamification, irrespective of whether their organisations have actively implemented these strategies (Moser & Korstjens, 2018). This focus on top leadership and senior management was crucial because their perspectives provided valuable information on the strategic rationale, challenges, and outcomes associated with gamification at a higher organisational level.

4.7 Time Horizon: Cross-Sectional

A cross-sectional time horizon was adopted, capturing data at a specific point in time to understand the current state of gamification practices and their impact on competitive advantage (Saunders & Lewis, 2018). A cross-sectional approach was appropriate for investigating the immediate effects and responses to gamification strategies within the manufacturing organisations, providing a snapshot of the relationships between gamification and competitive advantage (Korstjens & Moser, 2017; Saunders & Lewis, 2018).

In evaluating other time horizons, a longitudinal approach was rejected due to its complexity and resource demands, including longer data collection periods and increased costs. This approach was deemed unnecessary for a study focused on the current state of gamification practices. Similarly, a retrospective approach, which relies on historical data and recollections, was not suitable as it may not accurately reflect the current state or recent changes in gamification practices (Saunders & Lewis, 2018; Korstjens & Moser, 2017). Thus, the cross-sectional approach was chosen for its efficiency in providing an immediate, focused examination of gamification's current impact on competitive advantage.

4.8 Population

The population for this study comprised of leaders of manufacturing organisations in South Africa. This included senior executives, operations managers, and other relevant decision-makers who have significant knowledge of their organisation's strategic initiatives. The broad scope of this population was intended to capture

diverse perspectives on gamification practices across various sectors within the manufacturing industry.

4.9 Unit of Analysis

The unit of analysis was the individual leader within the manufacturing organisation. The focus was on understanding their perceptions and experiences with gamification. This unit of analysis aligned with the study's aim to capture a comprehensive understanding of how gamification is perceived in the South African manufacturing landscape (Schmidt et al., 2023; Nacke & Deterding, 2017; Patrício et al., 2021; Keepers et al., 2022).

4.10 Sampling Method and Size

4.10.1 Sampling Method

Purposive sampling was used to select participants with significant knowledge of their organisation's operations and strategic decisions, ensuring relevant experience and insights into the research topic (Moser & Korstjens, 2018). This method allowed for targeted selection, providing focused and detailed data (Moser & Korstjens, 2018; Andrade, 2021; Campbell et al., 2020). Andrade (2021) notes its usefulness for accessing hard-to-reach populations or when resources are limited, while Campbell et al. (2020) highlight its role in gathering in-depth insights from key informants.

However, purposive sampling limits generalisability, as findings are specific to the studied subpopulation and may introduce selection bias by excluding diverse perspectives (Andrade, 2021; Campbell et al., 2020). Despite these limitations, purposive sampling was suitable for this study's aim to capture the nuanced perspectives of senior management in South African manufacturing regarding gamification, providing critical, context-specific insights. To mitigate selection bias and enhance the relevance of findings, participants were selected across different manufacturing sub-sectors, ensuring a diverse range of experiences and perspectives.

4.10.2 Sampling Criteria

Participants were selected based on the following criteria. They were required to

- Hold a leadership position within a manufacturing organisation.

- Have significant knowledge of or involvement in the organisation's strategic initiatives.
- Be willing to participate in a semi-structured interview.

4.10.3 Sample Size

The sample size was determined by data saturation, which occurs when no new themes or insights emerge from the data. It was estimated that 10-15 interviews would be sufficient to achieve saturation (Moser & Korstjens, 2018). The method for achieving data saturation in this study can be found in chapter 5, [section 5.3](#).

4.10.4 Accessing the Sample

Potential participants were identified through industry networks, professional associations, and direct outreach to manufacturing companies. The decision to include firms from a broad range of sectors within the manufacturing industry was informed by the current state of gamification research, which has generally been limited in its focus on the manufacturing sector. By capturing data from a diverse array of sectors, this study aimed to address this gap and provide a comprehensive overview of gamification practices and their impact across the entire manufacturing industry.

Initial contact with potential participants was made via email or phone. To ensure a diverse and representative sample, the selection process included a strategy to limit the number of participants from any single sector. This broader approach was intended to enhance the relevance and generalisability of the findings, offering insights into gamification practices that are applicable across various manufacturing contexts.

4.11 Measurement Instrument

A semi-structured interview guide was to be used to facilitate the interviews. As the term gamification was possibly not widely understood, the interview guide (See [Appendix 2](#)) looked to clarify understanding with the participants or ensure a line of questioning where the elements of gamification are considered within manufacturing. The guide included open-ended questions designed to explore:

- Awareness and understanding of gamification.

- Implementation experiences of gamification (if any)
- Perceived benefits and challenges of gamification.
- Factors influencing the adoption or rejection of gamification.
- Impact of gamification on employee engagement and competitive advantage.
- Impact of gamification on organisational competitiveness

4.12 Data Gathering Process

Interviews were conducted in both face-to-face and virtual formats using Microsoft Teams. Distance and associated logistics challenges led to most interviews being conducted remotely via Microsoft Teams. This was also necessary to ensure broader participation across the South African manufacturing landscape, especially given the busy schedules of participants. Face-to-face interviews occurred in formal meeting rooms and were generally longer (45–60 minutes) compared to virtual interviews, which typically ranged from 30 minutes to 45 minutes. Participants in face-to-face settings were more conversational and willing to discuss broader topics. The virtual interviews on the other hand benefitted from the participants engaging from office environments with minimal distractions. This encouraged focused engagement. The approach adhered to the semi-structured format, with room for flexibility in responses while ensuring key research questions were covered. No pre-interview materials were shared beyond the initial introduction email, as shared in [Appendix 3](#). The interviews were then transcribed verbatim for analysis.

4.13 Data Analysis Approach

4.13.1 Thematic Analysis

The data was analysed using thematic analysis, which involves identifying, analysing, and reporting patterns (themes) within the data. Thematic analysis of interview transcripts following Braun and Clarke's (2021) six-step approach which include:

1. Familiarising with the data by reading transcripts and noting initial ideas.
2. Generating initial codes from the data.
3. Searching for themes by collating codes into potential themes.
4. Reviewing themes in relation to the coded extracts and the entire data set.
5. Defining and naming themes by refining the specifics of each theme.

6. Producing the report by selecting vivid, compelling extract examples, and relating the analysis back to the research questions and literature (Braun & Clarke, 2021).

This analysis approach was aligned with the research problem of understanding the effects of gamification and the barriers and enablers of its implementation in the manufacturing context. The approach ensured meaningful findings are derived from the data collected.

4.13.2 Quality Controls

To assure the quality of the data collected, this study adhered to established criteria for qualitative research. The quality controls were based on Lincoln and Guba's (1985) criteria of credibility, transferability, dependability, and confirmability as discussed by Korstjens and Moser (2018). These criteria were fundamental in ensuring the rigor and trustworthiness of qualitative research findings (Saunders & Lewis, 2018).

Credibility: Strategies to ensure credibility included prolonged engagement, persistent observation, and member check (Korstjens & Moser, 2018). Prolonged engagement involved lasting presence during observations or interviews to build trust and obtain rich data. Persistent observation focused on identifying relevant characteristics and elements for detailed study (Korstjens & Moser, 2018). Andrade (2021) highlights that these practices are critical for ensuring that findings authentically reflect participants' experiences and provide a deep understanding of the research topic.

Transferability: To enhance transferability, thick descriptions are provided, describing the research context, setting, sample characteristics, interview procedures, and changes based on iterative processes (Korstjens & Moser, 2018).

Dependability and Confirmability: An audit trail was maintained throughout the research process (Korstjens & Moser, 2018). This included transparently documenting research steps, decisions, team meetings, reflections, data management, and the emergence of findings (Korstjens & Moser, 2018). Campbell et al. (2020) emphasize that maintaining a thorough audit trail supports the dependability and confirmability of the study by ensuring transparency and systematic documentation throughout the research process.

Adhering to these quality controls strengthened the validity and reliability of the findings, ensuring that the data collected accurately represents the phenomenon under investigation.

4.14 Limitations

Despite the attention to quality controls, this study considered several limitations inherent to the chosen qualitative research methodology that could be encountered. Some potential limitations included:

Subjectivity: The interpretations and analysis of qualitative data are inherently subjective and could be influenced by the researchers biases and perspectives (Korstjens & Moser, 2018; Saunders & Lewis, 2018).

Generalisability: Qualitative research aims for in-depth understanding within specific contexts, limiting the generalisability of findings to broader populations or settings (Korstjens & Moser, 2018; Saunders & Lewis, 2018). Andrade (2021) highlights that research findings from purposive and convenience samples are limited to the specific subpopulations from which they were drawn. This limitation was crucial to acknowledge as the study's findings may not apply beyond the selected sample or setting.

Access to Participants: Gaining access to busy leaders in manufacturing organisations could be challenging and could limit the number of interviews conducted (Saunders & Lewis, 2018).

Time and resources: Conducting qualitative research often requires significant time, resources, and effort due to the detailed nature of data collection and analysis (Korstjens & Moser, 2018; Saunders & Lewis, 2018).

Sampling bias: Despite efforts to ensure diverse and representative samples, there could still be biases in the selection of participants, impacting the comprehensiveness of the findings (Korstjens & Moser, 2018; Saunders & Lewis, 2018). Purposive sampling could introduce bias if the criteria for selecting participants were too restrictive, potentially excluding relevant perspectives and affecting the comprehensiveness of the findings (Andrade, 2021; Campbell et al., 2020). This was a significant concern when the aim was to capture diverse viewpoints within a specific context. To address this, strategies such as setting quotas and monitoring sectoral distribution within the chosen regions were implemented to minimise bias.

Geographical Focus: The study was planned to consider manufacturing organisations within selected regions of South Africa, such as Kwazulu-Natal (KZN) or metropolitan areas, to provide a focused and manageable scope. This approach allowed for in-depth exploration of gamification practices within specific contexts. However, it was important to acknowledge that limiting the sample to certain regions may impact the generalisability of the findings. The final decision on whether to narrow the focus to specific regions or to include a broader range of areas was made based on initial findings and practical considerations during the study. The implications of this choice are discussed in [section 4.19](#).

Researcher influence: The presence of the researcher during data collection could have inadvertently influence participant responses or behaviours (Korstjens & Moser, 2018; Saunders & Lewis, 2018).

While these limitations were acknowledged, the study mitigated their potential impact through rigorous adherence to established quality criteria, transparency in reporting, effective time management and thorough documentation of the research process.

4.15 Ethical Considerations

Ethical considerations included obtaining informed consent from all participants, ensuring confidentiality and anonymity, and adhering to ethical guidelines for research with human subjects. Participants were informed about the purpose of the study, their right to withdraw, and how their data would be used (Saunders & Lewis, 2018). No transcription services were used, the researcher personally reviewed and transcribed all recordings to ensure confidentiality and accuracy.

4.16 Interview Process

The primary data collection method was qualitative interviews with senior manufacturing leaders. The interviews were structured to explore the leaders' perceptions and experiences regarding gamification in the South African manufacturing sector. Interviews were conducted with senior leaders from various South African manufacturing sectors. Leaders were selected for their extensive experience and executive roles within their organisations, ensuring that their insights were relevant to the research objectives. Their roles included Managing Directors, Vice Presidents, General Managers, Plant Managers and Manufacturing Executives. The professional backgrounds of participants ranged from engineering to business management, with experience levels spanning 15 to 35 years (see [Table 1](#)).

4.17 Recruitment

Participants were recruited primarily through professional networks, LinkedIn, and referrals. An initial introductory email provided a brief overview of the research focus, the importance of gamification in manufacturing, and assurances of confidentiality. The recruitment process aimed to reflect a diverse sample across industries and demographics. However, most respondents were white males, which mirrors the demographic composition of senior leadership in South Africa's manufacturing sector.

The 2023/24 Employment Equity Annual Report provides the following combined breakdown for Top Management and Senior Management in the manufacturing sector (Department of Employment and Labour, 2023):

- **Gender:** 72.1% male, 27.9% female
- **Race:** 58.2% White, 15.6% Black, 14.9% Indian, 7.9% Coloured, 3.5% foreign

The final sample in this research included 18 participants, with the following demographic breakdown:

- **Gender:** 83.3% males (15) and 16.7% females (3)
- **Race:** 44.4% White (8), 38.9% Indian (7), and 16.7% Black (3)

The demographic composition of the study sample largely aligns with national trends in leadership representation but reveals a lower proportion of female participants compared to the overall manufacturing sector.

While efforts were made to include a more racially and gender-diverse sample, only two Black females, one Black male, one Indian female, and a mix of Indian and white males were included in the study. Most participants were in the 50–55 age range, reflecting the typical age of senior leadership in the sector. Some potential participants declined due to time constraints or a perceived lack of knowledge on the topic.

4.18 Challenges Faced

A significant challenge was the initial hesitancy of some participants to discuss gamification, often citing their limited experience or knowledge of the topic. This is discussed further in the presentation of the results in [chapter five](#). Additionally, scheduling interviews with senior executives proved difficult due to their busy schedules, particularly toward the end of the calendar year, which coincides with

annual plant closures at many manufacturers. To mitigate this challenge, scheduling conflicts were managed with flexible timing. Despite these challenges, most interviews were successfully conducted within the proposed timeline.

4.19 Comparison to Proposed Methodology

The proposed methodology outlined face-to-face semi-structured interviews as the primary data collection method, with a focus on purposive sampling to target senior leaders in manufacturing. While the actual methodology aligned closely with the proposed approach, there were some deviations:

- **Interview Formats:** Although face-to-face interviews were preferred, 83% of the interviews were conducted virtually.
- **Participant Knowledge:** The assumption that participants would have a baseline understanding of gamification was not always accurate. This required the researcher to provide definitions and examples at the beginning of the interviews. This was not explicitly accounted for in the original methodology.
- **Geographic and Sector Representation:** The study successfully included participants from diverse manufacturing sectors, , as classified by the Department of Trade, Industry and Competition (n.d.), including automotive, textiles, FMCG, and chemicals. Geographic representation was also achieved, with interviews covering key manufacturing hubs such as eThekweni, Johannesburg and Cape Town. These regions are among South Africa’s key industrial centres, with Johannesburg accounting for 17.2%, Cape Town 14.1%, and eThekweni 12.5% of the national manufacturing workforce (Statistics South Africa, 2023). The inclusion of participants from these locations ensures that the study captures insights from diverse industrial contexts across the country.

4.20 Participant Demographics and Profiles

To ensure confidentiality, pseudonyms are used for both companies and participants, while locations have been generalised to the provincial level within South Africa to prevent identification. Table 1 below summarizes the participants’ demographic and professional profiles:

No.	Pseudonym	Sector	Location	Role	Age Range	Gender	Race
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1	John	Automotive Manufacturing	Kwazulu -Natal	Director	55-60	Male	White
2	Mark	Automotive Manufacturing	Kwazulu -Natal	Director	55-60	Male	White
3	Wayne	Personal Protective Equipment	Kwazulu -Natal	CEO	50-55	Male	White
4	Dora	Consumer Goods	Gauteng	Division Head	35-40	Female	Black
5	Moosa	Chemical Manufacturing	Gauteng	Division Head	40-45	Male	Indian
6	Raj	Chemical Manufacturing	Gauteng	Division Head	45-50	Male	Indian
7	Ray	Automotive Manufacturing	Kwazulu -Natal	Senior Vice President	50-55	Male	Indian
8	Sameer	Aluminium Manufacturing	Kwazulu -Natal	Division Head	45-50	Male	Indian
9	Sthe	Beverage Manufacturing	Western Cape	Plant Manager	35-40	Female	Black
10	Brian	Clothing Manufacturing	Kwazulu -Natal	General Manager	50-55	Male	White
11	Ahmed	Textile Manufacturing	Kwazulu -Natal	Director	45-50	Male	Indian
12	Paul	Textile Manufacturing	Kwazulu -Natal	General Manager	55-60	Male	White
13	Yunus	Plastics Manufacturing	Kwazulu -Natal	Director	25-30	Male	Indian
14	Tim	Rubber Manufacturing	Kwazulu -Natal	Director	45-50	Male	Black
15	Deon	Consumer Goods	Kwazulu -Natal	Executive	50-55	Male	White
16	Tanya	Personal Protective Equipment	Kwazulu -Natal	Executive	45-50	Female	Indian

17	Steve	Textile Manufacturing	Western Cape	Division Head	35-40	Male	White
18	Edward	Automotive Manufacturing	Kwazulu -Natal	Director	50-55	Male	White

Table 1 : Participants (including Pseudonyms and Demographics profiles)

Chapter 5: Presentation of Findings

This chapter presents the study's findings according to the key themes that emerged from the interviews with senior management in South African manufacturing. It offers a comprehensive overview of the data collected, detailing insights from the participants' responses and illustrating the central themes related to the role of gamification in the South African manufacturing sector. These findings are analysed in [chapter six](#), where they are linked to the relevant literature and theoretical frameworks to provide a deeper understanding of their implications.

5.1 Observations and Participant Engagement

Participants were generally open and forthcoming during the interviews. During the interviews, some participants expressed uncertainty about their knowledge of gamification, requiring the researcher to explain its definition and examples. This was reflected by some of the participants' quotes :

Paul: *"I'll be honest with you, it's not really a term I've come across. I had a brief look the one lunchtime day on the Internet."*

Sthe: *"So look, to be honest, I had no clue what it was until I read the brief that you sent me."*

John: *"You know, if you say gamification, you're thinking, what? A video game? Yeah. You know, your kids are playing video games. That's what you think. Yeah. You know, so you don't translate it into what we are discussing."*

Yunus: *"OK, to be honest, I haven't heard this term Before at all, until you messaged me."*

Tanya: *"You're asking me to talk about things that I'm very unfamiliar with."*

Once the discussion began, however, most participants engaged deeply, often realizing that they had encountered gamification in some form without recognizing it as such. The initial uncertainty about the topic was quickly alleviated through introductory discussions. After participants understood the concept of gamification, the conversations flowed more naturally. The discussions often revealed that participants had engaged with gamified processes without explicitly identifying them as such.

Participants showed varying levels of engagement with different themes:

- **Technology and Competitive Advantage:** These topics elicited the most detailed and enthusiastic responses. Participants were more engaged when discussing how gamification could be integrated with technology to enhance competitive advantage. Participants provided numerous examples of how gamification could impact organisations at a strategic level.
- **Supply Chain:** Discussions around gamification in supply chain contexts were less engaging. Participants appeared less familiar with its application in these areas. There was less clarity and fewer examples from the participants on how gamification could be applied effectively in supply chain contexts.
- **Rewards and Recognition:** This triggered longer and more thoughtful responses. Many participants provided examples of reward-based systems they had encountered or implemented in various organisational contexts. Notably, discussions on financial rewards sparked enthusiastic responses, while talk of companies' reluctance was met with acceptance rather than resistance. This shift in tone suggested a recognition of organisational constraints and the need for intrinsic motivation.
- **Future Applications of Gamification:** This topic consistently elicited longer discussions than the other focus areas. Participants were more enthusiastic about discussing the future implementation of gamification, with several expressing optimism and interest in exploring the possibilities for using gamification as a tool for organisational innovation.

5.2 Insights from Gamification Companies

In addition to the interviews with manufacturing leaders, two representatives from gamification companies were engaged to gain context about the state of gamification in South Africa. These discussions were informal and focused on understanding the penetration of gamification in the local market. The two representatives highlighted the following:

- Gamification is still in its early stages in South Africa, with limited adoption in manufacturing compared to sectors like retail and education.
- Companies often struggle to integrate gamification into existing processes due to cultural resistance and lack of technical expertise.
- The potential for gamification in manufacturing is significant, particularly in areas like employee training, performance tracking, and innovation.

- Resistance is often encountered by clients who are wary of ‘playing games at work’. To overcome this, they initially rebranded their offerings as ‘workplace simulations’ before returning to ‘gamification’ as the term gained broader acceptance.

These insights provided valuable context to the research but were not included in the formal analysis to maintain the focus on manufacturing leaders' perspectives.

5.3 Data Saturation

As outlined in the Methodology section ([4.10.3 Sample Size](#)), the sample size for this study was determined based on the principle of data saturation, which occurs when no new themes or insights emerge from the collected data (Moser & Korstjens, 2018). Given the qualitative nature of this research on gamification in South African manufacturing, it was initially estimated that 10 to 15 interviews would be sufficient to reach saturation, ensuring a comprehensive understanding of the perceptions, barriers, and enablers of gamification adoption without unnecessary redundancy.

Data saturation was effectively reached by the 15th interview, at which point all categories had been established, and no new themes emerged. While interviews 16 and 17 introduced some new codes, these were absorbed into existing categories, reinforcing that no fundamentally new insights were being introduced. The final interview (18) produced zero new codes, further confirming that saturation had been achieved. These final interviews had been pre-scheduled and were completed as planned, but their findings reaffirmed the decision that additional data collection beyond this point would not contribute further to the study's outcomes.

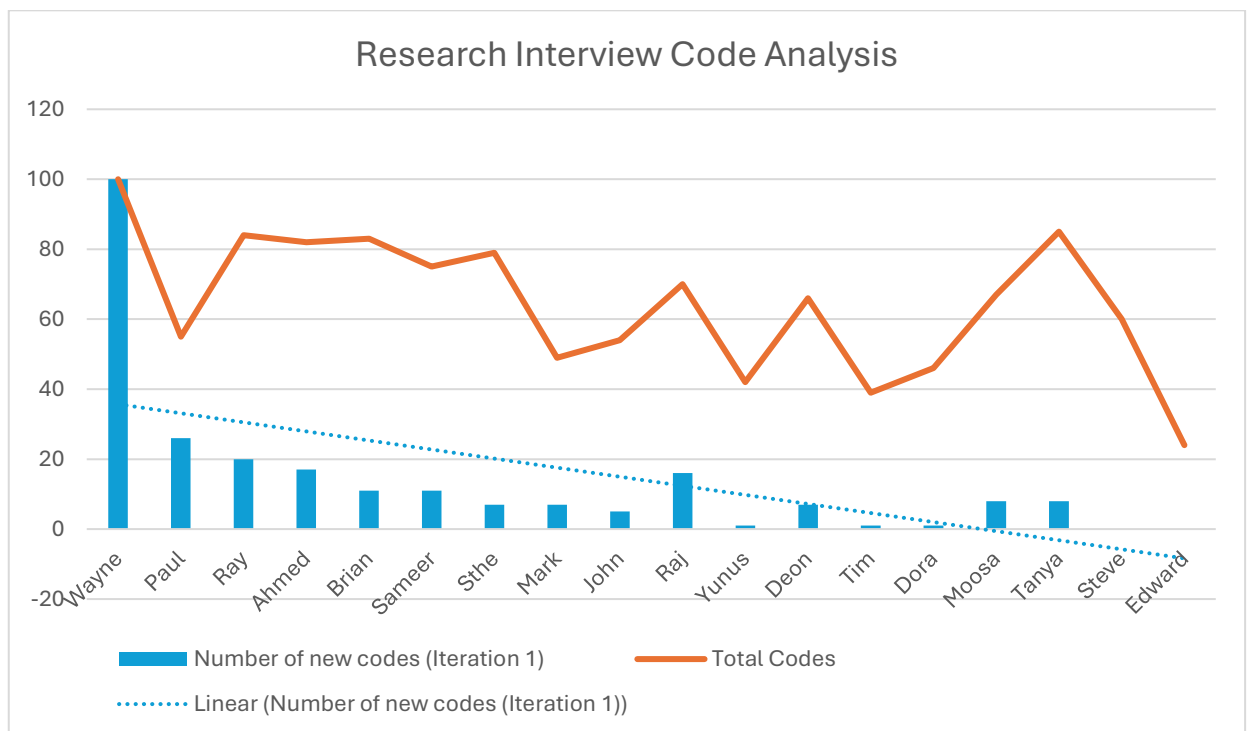


Figure 2 : Research Interview Code Analysis for Data Saturation

Figure 2 illustrates the number of new codes emerging at each interview, indicating the point at which saturation was reached in this study. As interviews progressed, it became evident that additional discussions were unlikely to yield novel perspectives on gamification adoption, employee engagement, and barriers within the manufacturing sector.

The decision to conclude data collection after 18 interviews, was validated by the consistency of findings across participants. The dataset sufficiently captured the key aspects of gamification adoption, including motivational drivers, perceived benefits, and implementation challenges within the South African manufacturing context.

5.4 Overview of Participants and Data Collection

Data collected was coded, categorised, and then developed into key themes. This systematic analysis serves as the foundation for presenting the findings in the following sections.

5.4.1 Coding Process Using Atlas.ti

Following the transcription of the semi-structured interviews, data was analysed using Atlas.ti, a qualitative data analysis software. The first step in the analysis process was the creation of initial codes, which were systematically applied to meaningful segments of text from the interview data. Codes were developed

inductively, meaning that the codes were not predefined but instead allowed to emerge organically from the data itself.

Each interview was carefully reviewed, and codes were assigned to phrases, sentences, or paragraphs that reflected significant concepts or issues related to the research questions. These codes were designed to capture essential aspects of participants' perspectives, including their understanding of gamification, challenges faced, and potential benefits.

For further reference, a comprehensive code book outlining the codes and categories developed is presented in [Appendix 4](#). This resource provides additional detail on how specific codes were applied and offers a transparent view of the analysis process.

5.4.2 Grouping Codes into Categories

Once the initial coding was complete, the next step was to group the codes into categories based on their similarities and relationships. This process involved reviewing the codes to identify common themes or recurring ideas. The codes were clustered into meaningful categories that represented broader patterns or concepts within the data.

For instance, codes related to understanding gamification were grouped under categories like 'Perspectives and Generational Views' and 'Understanding Gamification'. Similarly, codes reflecting concerns about fairness and equity in gamification were placed under the category 'Equity and Fairness in Gamification'. This step helped in the organisation of the data and laid the groundwork for the identification of overarching themes.

5.4.3 Development of Themes

The final stage of the analysis process was the development of themes. Themes were constructed by grouping the categories and identifying the key areas of discussion that were most relevant to the research objectives. These themes reflect the broad issues and perspectives shared by the participants on gamification in the South African manufacturing sector.

For example, the theme 'Making Sense of Gamification' emerged from categories such as 'Understanding Gamification', 'Perspectives and Generational Views', and 'Equity and Fairness in Gamification'. Another theme, 'Challenges of Gamification', was derived from categories like 'Cultural and Organisational Resistance', 'Incentive-

Related Challenges', and 'Leadership Factors'. These themes represent key aspects of the data and will be the focus of the findings presented in the following sections.

5.4.4 Emergence of Themes and Structure of this chapter

The themes that emerged from the data form the structure for presenting the findings in this chapter. Each theme addresses a critical area of discussion that aligns with the research objectives. The structure of this chapter is as follows:

- **Making Sense of Gamification:** Examines participants' understanding of gamification, including the generational and leadership perspectives, and addresses concerns around fairness and equity.
- **Uses of Gamification:** Focuses on current applications of gamification within South African manufacturing and potential future uses, including technology driven innovations.
- **Challenges of Gamification:** Highlights the organisational, technological, and cultural barriers to implementing gamification.
- **Effects of Gamification:** Explores the positive and negative impacts of gamification, with particular focus on its influence on employee engagement and organisational performance.
- **Leadership Perspectives and Strategic Implications:** Focuses on the role of senior management in shaping the success of gamification initiatives through their perceptions, support, and strategic vision. This theme is critical for understanding both the adoption process and its broader strategic outcomes.
- **Contextual Influences and Strategic Environment:** Examines external and internal factors that influence the adoption of gamification, such as market pressures, regulatory environment, and internal organisational culture.
- **Looking Forward:** Provides a forward-looking perspective on the role of gamification in manufacturing, including its potential expansion and new uses. This theme also incorporates key considerations for successful implementation, focusing on strategic goals and growth, which helps identify how gamification might evolve in the industry and contribute to long-term competitive advantage.

Table 2 below links each theme to the associated categories and codes that were identified through the analysis process. This table offers a clear overview of how the themes were derived from the interview data and provides a roadmap for the presentation of findings in the subsequent sections.

Themes	Categories / Code Groups
Making Sense of Gamification	Understanding Gamification, Perspectives and Generational Views, Equity and Fairness in Gamification
Uses of Gamification	Existing Applications in South African Manufacturing, Emerging and Proposed Uses, Technology as an Enabler
Challenges of Gamification	Cultural and Organisational Resistance, Incentive Related Challenges, Equity and Fairness in Gamification
Effects of Gamification	Positive Effects / Key Benefits, Negative Effects and Risks, Employee Benefits, Organisational Benefits
Leadership Perspectives and Strategic Implications	Leadership Factors, Strategic Vision and Growth
Contextual Influences and Strategic Environment	External Factors, Internal Factors
Looking Forward	Emerging and Proposed Uses, Key Implementation Considerations, , Strategic Vision and Growth

Table 2 : Linking Themes and Categories

This process, from coding to theme development, sets the foundation for the findings that will be discussed in detail in the subsequent sections. The emergence of these themes directly addresses the research objectives and provides insights into the role of gamification in South African manufacturing. Detailed findings relating to each theme are presented below.

5.5 Presentation of Findings

This section presents the study's findings, structured around the six key themes that emerged from the analysis of interview data, as per Table 2. Each theme is explored in detail, with supporting evidence drawn from the interview data. By exploring these themes, this section aims to provide a comprehensive overview of the findings, offering an in-depth understanding of how gamification is perceived, implemented, and envisioned within South African manufacturing. The findings lay the groundwork for the analysis in [chapter six](#), where they are linked to relevant literature and theoretical frameworks to offer a deeper exploration of the research questions.

5.5.1 Making Sense of Gamification

This section explores how participants conceptualised gamification, the ways they tried to make sense of it, and the key factors that influenced their understanding. The findings reveal a spectrum of awareness, with some participants demonstrating a deep understanding, others struggling to grasp the concept, and some relying on familiar examples to relate to it.

The term 'gamification' itself was perceived as problematic, as it carried connotations of games and entertainment rather than business improvement. However, through discussion, many interviewees recognised that gamification principles were already embedded in existing workplace structures, even if they had never been explicitly named as such.

Additionally, participants' perspectives on gamification were shaped by their industry background, generational outlook, and leadership roles. Many drew comparisons between gamification and established business performance models, highlighting how concepts such as KPI(Key Performance Indicator) dashboards, MDW (Mission-directed Work Teams), and workplace incentive schemes already incorporated elements of gamification. Others linked it to their personal experiences with digital rewards systems, loyalty programmes, and video gaming, making sense of the concept in ways that resonated with them.

At the same time, concerns about equity and fairness emerged, with participants questioning whether gamification could be applied fairly across different job roles and how unintended consequences, such as rewarding wrong behaviours, could be mitigated.

5.5.1.1 Understanding Gamification

The understanding of gamification varied significantly among participants. Some had never heard of the term before and struggled to relate to it in a business context, while others immediately likened it to existing performance management and incentive structures they were familiar with. A few participants from large corporate environments demonstrated a deeper understanding, having encountered formal gamification applications in training, performance management, or employee engagement initiatives.

Substantiating this one participant, Yusuf, a leader of a family owned business, openly admitted to researching it for the interview: *"OK, to be honest, I haven't heard this term before at all, until you messaged me. So all I did was a quick Google search ..."* Further going on to say: *"in a manufacturing plant, I was battling to see how we could implement something like that."*

Many participants associated gamification with established reward-based programmes, such as those used in financial services or health and wellness. The Discovery Vitality rewards system was one of the most frequently mentioned examples, illustrating how people already engage with gamified systems without necessarily recognising them as such. Sameer compared gamification in business to how Discovery drives customer engagement: *" And where I start from is I always use the analogy of the Discovery Vitality, right? You know, you got the rings and you got the points and you got that for insurance and you got that for your activities and you stay fit because of the rings..."*

Others linked gamification to personal experiences in video gaming, such as PlayStation achievements, loyalty programmes, or performance dashboards in cars. Ahmed shared an example from his personal life: *"I got my wife a Toyota Cross Hybrid earlier this year and that gives you an ECO score. So each one of us to try to drive it, we try to get the best ECO score, but that's a form of gamification."*

For some, gamification evoked memories of video gaming, with leaderboards and scoring systems creating engagement. Tanya commented: *"It's like PlayStation, people like to see their progress, they like to level up, and they like getting rewards. That's human nature."*

John highlighted: *"You know, if you say gamification, you're thinking, what? A video game? Yeah. You know, your kids are playing video games. That's what you think. Yeah. You know, so you don't translate it into what we discussing."*

Similarly, John made this connection comparing gamification to loyalty programmes and reward systems.: *"I mean, I drink coffee, so you know, you go and buy your coffee at the shop and they give you a point, and then you get to the 10 points and get a free one. You almost, you're watching that? I mean, I watch it. So it works."*

However, despite these recognitions, some participants noted that the term 'gamification' itself created resistance. They argued that the word 'gamify' might make it seem frivolous or irrelevant to serious business operations.

Sameer highlighted this by remarking: *"if you tell them, OK, now we gamifying this if you deliver this thing to us. They're gonna either laugh at you or they're gonna say OK, what's in it for me?"*

This concern was echoed by representatives from gamification companies interviewed for context. These industry experts shared that the term 'gamification' itself faced initial resistance from clients, who often found it difficult to take seriously. Gamification companies explained that they initially rebranded their offerings as 'workplace simulations' to ease this scepticism

Despite this, a common observation among participants was that gamification principles were already present in manufacturing operations, though not formally recognised as such. Participants commonly likened gamification to existing systems in manufacturing, particularly structured performance monitoring tools like MDW, 5S (Sort, Set in order, Shine, Standardise, Sustain) competitions, and team KPIs, seen as indirect forms of gamification. Deon illustrated this by drawing parallels to existing manufacturing practices: *"So there's a there's always in every factory. I've worked on every supply chain I've worked on, there's very clear metrics or KPIs. In some places they're not very visible, so I'd say there's like less of a gamification element there, but in most cases they're very visible and very well known. So even though we don't call it that, we call it a target and we incentivize people to get to a target, which I suppose in in the broader definition, we can come down to gamification."*

Sthe noted this by saying: *"You still run the same way that you're running, but now we're tracking those KPIs, KPIs in a bit more detail and showing you every month where you are compared to your counterpart."*

Similarly, Tim reflected on how businesses already encourage performance improvements through competitive elements: *"Having a set number of sort of objective the one came from it was from safety one had productivity one had quality"*

one had delivery on time delivery full and the other one had something that was related to cost..."

This suggests that while gamification is already applied in business environments, the term itself remains unfamiliar and may require repositioning to gain wider acceptance in manufacturing.

5.5.1.2 Perspectives on Gamification

Participants shared varied perspectives on gamification, shaped by their experiences in manufacturing and their observations of how different workforce demographics react to gamified systems.

A common theme was the perceived generational divide in gamification adoption. Many participants believed that younger employees were more inclined to embrace gamification, while older employees were more resistant. Raj explained: *"I think your older type of Crowd doesn't tend to influence them as much as it might the younger crowd. That is, you know, they grew up with the concept of gaming and handheld devices, et cetera."*

Steve also shared: *"...I feel like there's potentially a better an appetite to gamify amongst the younger generation as opposed to a traditional way of thinking which is firmly entrenched with our mid to oldest tier of staff. And in our case you know the mid to older tiers, are the majority of our workforce."*

However, there was also a belief that older employees tend to resist gamification, viewing it as unnecessary or even condescending. Brian commented: *"The youth are coming through and they(the older staff) build themselves these fortresses around, making everything seem like it's very difficult to do how they secure their job, their job security."*

In addition to generational perspectives, participants also provided insights into how gamification is viewed within manufacturing. Many felt that the industry was slow to embrace gamification, as efficiency, safety, and compliance tend to be prioritised over engagement strategies. Mark remarked: *"Manufacturing is about numbers, about performance. The idea of making work 'fun' is not something we think about. If it helps with productivity, then fine, but otherwise, it's just an extra thing."*

Overall, perspectives on gamification were shaped by both demographic factors and industry norms, with acceptance depending largely on how well gamification aligns with measurable business outcomes.

However, some participants worried that gamification might not appeal to all employees equally. Dora mentioned: *"And with the older guys, not the newer generation that well versed with working with phones. They know how to work with the computer, but your older generations that are still within the manufacturing sector, they're not as technologically savvy. So they'd be a lot of coaching and babysitting."*

These perspectives from the participants indicate that the concept of gamification is understood from various viewpoints and brings with it notions of newness and making work fun.

5.5.1.3 Equity and Fairness in Gamification

Concerns around equity and fairness were central to participants' evaluations of gamification.

Tim mentioned: *"for me is that you end up making sure that albeit that you are seeing that you get to be better than the other team and you know that you're competing, but you still need to see that you know you get to play in a fair manner if you work."*

Some worried that gamification might create unintended biases, disproportionately favouring employees who are already high performers while leaving others demotivated.

Moosa raised concerns about fairness in individual reward systems: *"If only one person wins, what happens to the rest? If it's always the same people at the top, you'll demotivate the ones who feel they can't catch up."*

Similarly, Raj pointed out that some roles lend themselves better to gamification than others, creating potential inequities: *"It's easy to gamify sales targets, but how do you gamify maintenance teams? Some jobs don't have clear win/lose conditions."*

At the same time, participants recognised that leaders play a role in ensuring gamification is implemented responsibly. A hypothetical problem raised by Ray, illustrated how poorly designed gamification systems could reward the wrong behaviours with an anecdote: *" You know, let's say Johnny wins, right? But the problem is that Johnny, fortunately, his results were great... but if you don't write the rules properly for it, and Johnny was also just charged with sexual harassment last week. You know, so how can Johnny win this, great output of his job and his role and he's saved so much of money and he's, you know, he's done well, but actually there's something else that Johnny's done that counter to the values of the company."*

This highlights a key leadership challenge, ensuring that gamification does not inadvertently reinforce toxic workplace behaviour, you cannot just reward numbers without looking at the bigger picture. Participants felt that if gamification rewards only output without considering ethics or teamwork, it could lead to unhealthy competition and unethical behaviour.

Another key fairness concern raised during the interviews was transparency in scoring systems. Participants warned that if employees felt the system was rigged or manipulated, it could erode trust rather than build engagement. Moosa explained: *"If people don't trust how points are awarded, they'll disengage. It has to be clear, fair, and something they can buy into."*

These discussions reflect a broader concern that gamification must be designed carefully to avoid reinforcing inequalities or introducing unfair competition.

5.5.1.4 Theme Summary

In summary, participants' understanding and perceptions of gamification were diverse, shaped by prior exposure, generational views, and leadership experiences. While many initially struggled with the terminology, they often recognised gamification's principles in familiar business and personal contexts.

However, significant concerns were raised about how gamification is introduced, with participants highlighting the need for deep reflection of the rules of the gamified process, fairness in implementation, and careful consideration of unintended consequences. The findings in this section illustrate the complexity of making sense of gamification, a concept that is already in practice in many ways, yet still unfamiliar and often misunderstood in the South African manufacturing sector.

The next section will explore the practical applications of gamification, examining how companies are currently using it and where opportunities for further adoption are deemed to exist.

5.5.2 Uses of Gamification

Participants shared various insights into how gamification is being implemented in South African manufacturing, ranging from pilot initiatives at the shop floor level to its potential role in shaping long-term business strategy. These uses span multiple areas, from enhancing employee engagement and productivity to driving healthier competition and improving supply chain dynamics. The growing integration of

gamification within these businesses reflects both the opportunities and challenges of leveraging this approach for sustained performance improvement.

5.5.2.1 Existing Applications in South African Manufacturing

Drawing from the interviews, it is evident that the application of gamification is varied in South Africa. While some organisations limit their use of gamification to the shop floor, others have incorporated it into their finance operations. For example, Deon mentions that it is used in select parts of the business: *"I think gamification is only really used on the shop floor right now. It's not something we see applied in other areas."* In Deon's context, the use of gamification was limited to manufacturing operations and not other departments such as HR or finance.

In other instances, it has filtered into the supply chain. Sthe noted: *"We definitely do that...in that this is our Gold Star supplier because from a performance point of view from a relationship point."* She highlights that gamification is not just about individual performance but also about fostering a competitive environment across different teams and departments. Clearly, the adoption of gamification among the participants is not homogenous. Nevertheless, their reasons for gamifying elements or processes relate to encouraging employee engagement.

Employee engagement is one of the most prominent areas where gamification is being applied. Ahmed explained: *"Then maybe be more engaged during the day, and I think that's the problem is to try to keep the workers engaged during day, and gamification might be the way for manufacturing."*

As Wayne shared: *"I think gamifying processes and the likes makes it easier to engage, easier to interact with types of technologies used for that."*

The use of visualisation tools was a key application of gamification in manufacturing, as identified by multiple participants.

John: *"Certainly from a dashboard point of view, ... dashboards typically serve as performance indicators of the lines, but in addition to that, there's various tools that we use for the engagement of people. You know whether that is attendance, whether it is bright ideas, whether it is reporting of near misses. So all the operational things where we can improve and enhance. In order for us to get engagement with the workforce, we use various methods to try and increase engagement."*

Wayne: *"We use a variety of dashboards, dashboards, make them visible, make the scores visible."*

Brian: *"this display is on TV sets top line so all operators facing forward all 19 face forward and sitting at the top of the line is a TV displaying this in real time."*

Sameer: *"There are 70 TV's. It real time updates your production figures. Green or red?...It's actually quite nifty because it gives you a happy face and a sad face if you've met your targets and then you got targets for areas in the basic stuff. "*

The visibility of performance metrics is crucial in gamification, as the above participants have shared. It allows employees to track their progress in real-time, providing both immediate feedback and motivation. These visual systems, such as dashboards and leaderboards, make it easier for employees to understand how their performance impacts the company and how they compare to their peers.

5.5.2.2 Emerging and Proposed Uses

As gamification continues to evolve, companies are exploring its use beyond the shop floor and into broader organisational processes. Wayne proposed: *"Budgeting, for example, we have a budget process now. And I think there's a lot more that we could do in that process to stimulate competition and engagement by the senior team on a budget perspective."*

Similarly, gamification's potential to expand beyond the shop floor is also evident in its use across multiple departments. Raj explained: *"We started with small pilots, just trying to gamify performance tracking in a few departments. But now, it's something we look at expanding to all areas."*

This signals a shift from gamification being a tool used only at the operational level to something that could eventually impact many aspects of business management.

5.5.2.3 Technology as an Enabler

A core strength of gamification, which arose from the interviews, is its ability to facilitate engagement with new technologies and enhance their adoption across the workforce. As Ray noted: *"AI can play a role because it may be able to with the rules you've written, make it more efficient."* With Tanya further saying: *"I think the thing that will make it easier and better and accelerated is the adoption of technology."*

The use of data-driven systems is another aspect where gamification and technology converge. Wayne shared: *"We also use systems like... it's called Quantive. Quantive is an objective and key result-based dashboard."*

The integration of gamified dashboards, which track key performance indicators (KPIs) and other critical metrics, enables companies to monitor progress and make

data-driven decisions. These systems ensure that employees are not only aware of their individual performance but are also aware of how their efforts contribute to larger organisational goals, thus reinforcing alignment between personal and company objectives.

Yet, the cost of technology remains a major barrier for some organisations. Sameer spoke about the substantial financial commitment needed to set up and maintain gamified systems: *“It was 2 million to set up the platform and you had to go an ongoing fee of a million rands just to get the gamification platform working. I didn't see the value in that to be honest”*

This illustrates the resource constraints that many companies face. For smaller businesses or those operating within tight budgets, these costs can be prohibitive, leading some to question whether the return on investment justifies the expense.

5.5.2.4 Theme Summary

Despite a lack of direct identification, gamification in South African manufacturing appears to have already seen success in employee engagement, productivity improvement, and technology integration. However, there are contrasting views on its scope and application, particularly when it comes to expanding beyond the shop floor and applying it to more complex or strategic tasks. While some see gamification as a short-term tool for simple tasks, others believe it has the potential to simplify even the most complex business processes.

As gamification continues to grow and evolve within the manufacturing sector, its future applications will likely depend on how organisations overcome the challenges of scaling it beyond pilot projects and adapting it to more intricate tasks. The next section will delve into the challenges of gamification, exploring the barriers organisations face in implementing gamification effectively and the potential risks associated with its widespread use.

5.5.3 Challenges of Gamification

While gamification has the potential to drive performance and engagement, several challenges must be addressed before it can be effectively implemented across organisational functions. Participants highlighted a range of issues, from implementation difficulties to cultural resistance, incentive-related concerns, and technology integration barriers. These challenges were discussed by the participants and span both organisational and individual barriers. Table 3 summarises the main

challenges identified by participants and provides insight into how these challenges affect the implementation and success of gamification within organisations.

Challenges Identified	Description	Impact
Measurement difficulties	Difficulty in quantifying the effectiveness of gamification on engagement and performance improvements.	Limits the ability to assess success
Information sharing issues	Challenges with sharing data and performance results across departments or teams.	Can lead to siloed efforts
Integration barriers with existing systems	Difficulty in integrating gamified systems with existing IT infrastructure and processes.	Reduces the overall impact and scale
Individual vs team-focused gamification	Tension between incentivizing individual performance versus team achievements.	Can lead to unhealthy competition
Employees' reluctance to engage with gamification	Resistance from employees, especially those not familiar or comfortable with game-like structures in the workplace.	Slows down adoption and engagement
Lack of leadership support for gamification	Insufficient support or buy-in from leadership, leading to unsuccessful or poorly implemented gamification initiatives.	Undermines the potential for success
Misalignment of gamification with long-term business goals	A focus on short-term results, rather than how gamification can contribute to long-term growth and strategy.	Affects the sustainability of gamification

Financial incentives leading to short-term focus	Over-reliance on financial rewards can encourage a short-term mindset, undermining long-term engagement or innovation.	Results in disengagement from larger goals
Confusion due to unclear incentive structures	Lack of clarity regarding how to earn rewards or the specific goals of the gamified system.	Reduces motivation and clarity
Risk of fostering unhealthy competition	The competition encouraged by gamification may become cutthroat or divisive, rather than promoting collaborative performance.	Damages teamwork and cooperation
The challenge of creating balanced and healthy competition	Ensuring that competition remains healthy and encourages growth without leading to negative behaviours such as cheating or sabotaging others.	Affects collaboration and morale
Resistance to gamification driven by company culture	Ingrained company culture that resists changes like gamification, particularly in traditional manufacturing environments.	Slow adoption and reluctance to change
Difficulty in aligning gamification with organisational goals	The challenge of ensuring that gamified systems align with and reinforce the organisation's core objectives and strategy.	Limits the potential business impact

Table 3 : Key Challenges Identified

The word cloud, presented in Figure 3, visualises the key challenges identified by participants in implementing gamification. The size of each term reflects the frequency with which it was mentioned, highlighting the most significant obstacles organisations face when adopting gamification strategies. Commonly discussed challenges relate to measurement, incentive related challenges, change management and cultural resistance, among others. By visualizing these themes, we can quickly see the predominant concerns that may hinder the effective

implementation of gamification and that may require careful attention from leadership.



Figure 3 : Word cloud representing challenges to gamification

5.5.3.1 Implementation Challenges

A key concern among participants was the difficulty in measuring the effectiveness of gamification. As Wayne observed, *"I wouldn't consider ourselves great at gamification. What we've done might sound good, but we haven't really seen the results we expected. It creates visibility, but has it fostered positive competition? Not as much as I'd like."* This concern speaks to the challenge of measuring success in gamification and the risk of simply achieving visibility without translating that into meaningful engagement or performance improvement.

Moreover, the focus on individual competition versus team-based goals was a point of concern. Sthe noted, *"It's creating competition among people, but sometimes it can be more about just winning rather than improving together."* This reinforces the notion that gamification must be carefully designed to foster collaboration rather than just competition, especially within teams working towards shared goals.

5.5.3.2 Cultural and Organisational Resistance

Cultural resistance to gamification was recognised as a significant barrier to its successful implementation. Dora remarked: *"If you're not ready to make that cultural shift, then gamification might not take off."* This underscores the need for a cultural shift in organisations before gamification can be successfully adopted. Without this

shift, gamification could easily be seen as another short-lived initiative, rather than a transformative tool that integrates into the organisational fabric.

Tanya highlighted that leadership support is critical for gamification to succeed, noting: *"For me, it's around leadership and culture. If leaders are not behind it, if from a culture perspective it's not embedded in the way you do things, if it's an add-on, it doesn't work."*

There was also a concern about openness and trust within the organisation, which is necessary for gamification to flourish. Tanya mentioned: *"People don't want to put up bad news on the board... People don't want to share their information, because information is power."*

Furthermore, she stressed the need for a mindset shift, saying: *"You require change in mindset... Being transparent, putting up bad news on the board."* She highlighted the importance of trust and the ability to share mistakes for gamification to be used effectively. A safe environment where employees are allowed to fail without judgment is key to creating a culture that embraces gamification.

Raj added that company culture significantly influences the success of gamification. He noted: *"Culture is a big word, but it's the attitude of being able to have fun at work and allowing people to have fun at work... if the company already has that built into the way they do things, it's a lot easier to introduce a gamification concept."* This points to the fact that organisations with an already engaged and open culture are more likely to successfully integrate gamification. When fun and engagement are already valued within the organisation, gamification can be seen as a natural extension of these values.

Brian echoed a similar sentiment to Raj by emphasising the need for a safe space where employees feel comfortable to experiment. He said: *"Yeah, where we allow people a safe space to experiment. How much they experiment? Oh, they're still quite nervous..."* Despite this safe space being available, Brian noted that there remains reluctance among employees to fully embrace new practices. Thus cultural inertia and fear of failure may pose significant barriers to adopting gamification.

Steve highlighted that gamification is not yet embedded into the daily operations of many organisations, saying: *"For me, it's about infusing a culture of continuously improving the game... I don't think we've infused that culture of gamification into what is normal work. It's seen as something special, different, unique."* This reflects a challenge in making gamification a normal part of work processes rather than

something seen as isolated or temporary. For gamification to become truly effective, it needs to be fully integrated into the organisation's culture as an everyday tool for engagement and improvement.

Overall, respondents argued that cultural and organisational resistance remains a key challenge in adopting gamification. Organisations must foster a culture of openness and trust, where both successes and failures are shared and used as learning tools. Leadership buy-in is essential, as gamification needs to be embedded into the company's culture rather than treated as an additional initiative. While younger employees may be more open to gamification, older generations may resist it, viewing it as unnecessary or infantilizing. To overcome this resistance, organisations need to cultivate a culture that values experimentation, fun, and continuous improvement, ensuring that gamification becomes a sustainable, long-term part of the company's operations.

5.5.3.3 Incentive Challenges

Incentive-related issues emerged as one of the most discussed challenges of gamification. Several participants highlighted the negative impact of financial incentives on employee motivation. Wayne shared, *"Financial rewards can drive the wrong behaviour. If people are just chasing the money, then you're not fostering real engagement, just short-term outcomes."* Ahmed also mentioned, *"Employees are focused on the financial reward, not recognition. They want money, not a trophy."* Dora explained, *"When gamification becomes about just the prizes, you miss the point. It needs to be about engagement and growth, not just material rewards."* These views reflect a growing concern that monetary incentives, when used incorrectly, can foster unhealthy competition and short-term thinking, rather than encouraging sustainable engagement.

Additionally, there was the issue of clarity around incentives. Sthe remarked, *"The incentives aren't always clear. Sometimes it's hard to understand what you need to do to earn the rewards."* This lack of clarity in how rewards are structured can lead to confusion and disengagement.

Moreover, remuneration-based incentives were seen to potentially encourage the wrong behaviours. Sameer pointed out, *"If remuneration is tied to gamification outcomes, people might focus on just winning rather than improving their overall work quality."* This highlights the potential risk that financial incentives might overshadow intrinsic motivation.

This challenge is closely linked to the short-term focus that financial incentives can foster. Sthe remarked: *"The issue with financial incentives is that it makes people focus on winning now, rather than looking at long-term improvements."* Wayne added: *"It creates a short-term mindset...people are chasing the numbers, but they're not necessarily solving the root problems."*

5.5.3.4 Healthy vs Unhealthy Competition

A central theme in the challenges discussed was how competition is encouraged through gamification. While competition is often seen as a motivator, unhealthy competition can result in negative behaviours. Wayne cautioned, *"The risk is that sometimes competition becomes more about winning than actually solving the problem. It can create silos rather than fostering teamwork."* This concern reflects the potential for gamification to inadvertently encourage a win-at-all-costs mentality, where individuals prioritise personal success over collaborative goals.

In contrast, when healthy competition is introduced, it can foster a sense of teamwork and collective achievement. Sthe noted, *"When gamification is done right, it's about pushing each other to improve, not just to be the best. It's about lifting the entire team."* This more balanced approach to competition ensures that gamification encourages collaboration and continuous improvement rather than division and rivalry.

As Moosa highlighted, *"It's important to strike the right balance...competition should motivate, not divide."*

5.5.3.5 Designing the Rules: Subjectivity and the Need for Freshness

One of the most significant challenges in designing gamification rules is ensuring they remain both engaging and dynamic over time. As Ray pointed out, *"... so the rules of your measurement need to be very, very clear."*

In addition to clarity, keeping gamification systems fresh was a central concern raised by participants. Steve shared, *"It does have the potential to become stale. And when it becomes stale, it loses its drive as a motivating factor."* This underscores the necessity of constantly evolving gamification to maintain its effectiveness over time. Steve added: *"The response to that, needs to be an emphasis on continuously improving the game."* This suggests that organisations must prioritise ongoing updates and new challenges to keep the gamified system engaging and motivating for employees.

Deon echoed this sentiment, using a sports analogy: *"So you gonna pretty much be constantly evolving it and making it new and all of that stuff all the time. You know, if you only ever watch the Sharks play the Bulls and the first three games would be a cracker. I wouldn't go to the 4th game."* This analogy highlights the importance of variation and new challenges in gamification to avoid monotony and keep employees engaged over time. Without regular updates or fresh elements, gamification risks becoming repetitive and losing its initial appeal.

Participants highlighted that designing gamification rules that are clear, flexible, and regularly updated is critical for maintaining long-term engagement and ensuring the system supports both performance and ethical behaviour. Gamification must evolve with the organisation's goals while remaining motivating and fair for all employees.

5.5.3.6 Technology and System Integration Challenges

Finally, technology integration emerged as another obstacle. Many organisations face difficulty in integrating gamified systems with their existing IT infrastructure. Sameer noted, *"The technology side of gamification can be overwhelming. It needs to integrate with other systems, but we're not there yet."* This lack of integration with other key operational systems hinders the scalability of gamification across departments. Wayne agreed, saying, *"We have various systems...HR, ERP, dashboards...but they don't work together seamlessly."*

Moreover, the complexity of gamification systems may present a barrier to entry for organisations that lack the necessary technological expertise. Paul mentioned, *"The complexity of some of these systems, especially for non-technical teams, can be a major hurdle. If it's not easy to use, it won't be adopted."*

5.5.3.7 Theme Summary

As suggested by the respondents, the challenges of gamification are multifaceted and require careful consideration of measurement tools, cultural readiness, fairness, the incentives, the structure of the roles, methods to sustain the use, and technology integration. While gamification is seen to have the potential to drive meaningful change, its success hinges on thoughtful design, leadership buy-in, remaining fresh, and the ability to align gamified elements with organisational goals. Participants emphasized that short-term incentives, if not managed properly, could create the wrong behaviours, and systems integration remains a significant technical hurdle. It was emphasised that overcoming these challenges will require a more strategic and

holistic approach to ensure that gamification can truly enhance engagement and drive long-term organisational growth.

In light of these challenges, it is crucial to explore the effects of gamification, both the positive outcomes and the potential risks, as well as how these elements impact employee and organisational benefits.

5.4.4 Effects of Gamification

The previous sections highlighted the participant's experiences and uses of gamification. Based on this, both positive and negative effects of the adoption of gamification have been shared by participants.

Understanding these effects is essential to gauge the broader implications of gamification and its potential contribution to a competitive advantage. This section explores how gamification affects employee motivation, workplace dynamics, and organisational performance.

5.4.4.1 Positive Effects / Key Benefits

One of the most widely discussed positive effects of gamification, which arose during the interviews, was its ability to increase engagement. As Edward noted, "*...the benefit of gamification is that the employee gets engaged. You know, they, they no longer come in just for a paycheck, especially if somebody is a has some skill set that they wanna show off.*" He elaborated that this excitement fosters a deeper connection between the employee and the work at hand.

The word cloud, in Figure 4, and data in Table 4, presents the positive effects and key benefits of gamification as described by participants. The size of each word corresponds to its frequency of mention, underscoring the most significant advantages gamification brings to the workplace. Motivation, employee engagement, and real-time data access are among the top benefits highlighted, indicating the positive impact gamification can have on both individual performance and overall organisational efficiency. This visualisation helps to underscore the importance of gamification as a powerful tool for enhancing motivation, productivity, and collaboration within teams.



Figure 4 : Word cloud representing benefits of gamification

Category	Subcategory	Positive Effects	Frequency of Mentions
Employee Engagement	Motivation	Increased employee motivation, engagement, and interaction with processes	35
	Bringing Fun to the Workplace	Making work more enjoyable by introducing game elements to often mundane and repetitive tasks	13
	Productivity	Gamification linked to improved productivity and efficiency, particularly in repetitive tasks	5
Organisational Benefits	Access to Real-Time Data	Real-time feedback and data visualisation allows employees to track progress and adjust behaviours accordingly	14
	Enables Strategic Alignment and Communication	Helps align employee goals with organisational objectives and improves communication across teams	9
	Skill Development	Gamification facilitating skill development and learning	8

	Improves Participation	Encouraging employees to participate more actively in work-related processes	6
	Performance Improvement	Measurable improvements in team performance, operational efficiency	5
	Positive Contribution to Innovation	Encourages employees to think creatively, fostering innovative contributions to the company	3
Employee Benefits	Creates Visibility	Visualizing tasks, simplifying processes, and visualizing individual or team performance and progress	11
	Skill Development	Gamification facilitating skill development and learning	8
	Creates Status or Prestige	Winners or development progression allow individuals to gain recognition or badges for their achievements	2

Table 4 : Frequency of mentions : Positive Effects / Key Benefits of Gamification

As established, gamification introduces game-like elements that provide regular feedback, create a sense of achievement, and offer rewards. Raj observed, *"The immediate feedback from gamification systems makes it clear to employees what they're doing right and where they need to improve, which keeps them motivated."* By tracking progress in real-time, employees feel a sense of accomplishment that drives them to keep improving.

Participants also distinguished between individual and team engagement in relation to gamification. In addition to individual motivation, gamification can foster collaborative environments. Brian explained, *"We don't measure individuals, we measure the whole team. That was a fundamental structure we put in place because obviously any individual can win, but then the team doesn't necessarily win. What we want is the whole team to win."* Participants reflected on the use of team-based challenges in manufacturing, especially in shop floor settings, where employees collaborate and pool resources to achieve common goals, enhancing team cohesion and promoting a collective sense of purpose.

Gamification also serves as a learning tool, with many systems integrating training modules that encourage skill development in a fun and interactive way. Raj highlighted: *"The gamified system not only makes learning fun but also pushes employees to develop new skills and build on existing ones, making them more capable in their roles."*

Edward also added: *"It mines out talent that you could have not seen if there weren't this motivation, so I think you've got to sow whatever you can to for people to engage and talent. It's expensive to get talent from the outside. And sometimes it's sitting right under your nose, and I think you've got one more tool to harvest talent from within with gamification."*

As employees engage with the system, they simultaneously improve their competencies, preparing them for future leadership roles within the organisation.

In manufacturing, where tasks can often become repetitive and monotonous, gamification offers an innovative way to inject fun into the process, making work more engaging and enjoyable. John explained: *"I think so, I think just simply what we said about some tasks are just mundane and you know, just don't wanna do that particular task. I mean, there's always those tasks. Trying to find the way that makes it [mundane tasks] that a little bit more Interesting or achievable..."* This transformation of routine tasks into interactive challenges not only increases engagement but also provides employees with a sense of accomplishment after completing even the most mundane tasks. By breaking the monotony, gamification makes work feel more rewarding, which enhances motivation and job satisfaction.

Raj highlighted the broader impact of gamification, saying: *"You realize that everybody has fun. Doesn't matter whether you're winning or losing. Everybody's smiling, everybody's enjoying it. They're all having fun, and that's the key takeaway."* For Raj, gamification is not just about achieving goals but also about fostering a sense of enjoyment and team spirit in the workplace. The ability to balance fun with the achievement of business objectives makes gamification a powerful tool for engagement.

Further emphasising this, Dora mentioned: *"If we have such modules in a game where the operators could interact with the machines from a gaming point of view... it would be much more fun, much more interactive..."* Dora's insight reflects the potential for gamification to transform routine operations into engaging, interactive

experiences that not only make the work environment more enjoyable but also encourage innovative thinking and greater involvement with the task at hand.

5.4.4.2 Employee Benefits

The most significant employee benefits of gamification are enhanced motivation, improved performance, and skills development. This has been established in the literature and reiterated in the interviews. By making work more interactive and rewarding, gamification fosters an environment where employees feel valued, recognized, and empowered. The regular feedback helps employees understand their strengths and areas for improvement, which encourages self-improvement and engagement. John reflected on this by saying: *"...belonging to a tribe is kind of the concept. And in belonging to the tribe, you, you have that sense of where you fit in, and then the hierarchy and all that sort of thing..."*

Furthermore, gamified systems often help employees track their progress towards personal and professional development goals, contributing to increased job satisfaction. Steve: *"...if you make that a way of work, then your work satisfaction should be higher."*

In addition, Moosa highlighted how the transparency embedded in gamification can empower employees and create a fairer, more accountable work environment. He stated: *"So if there's a very clear leaderboard with fair rules of engagement in terms of incentives, ... Then it does add a layer of transparency, which then puts the onus back onto the employee and by putting the onus back onto them, it also empowers the employee to say this is what it is, go out and try."*

He further added: *"And it might eliminate, or at the very least minimize perceptions of favouritism or nepotism, or any of the other workforce dynamics that sometimes creep in and affect culture."*

5.4.4.3 Organisational Benefits

On an organisational level, the key benefits of gamification include improved employee performance, increased collaboration, and higher retention rates. By aligning gamified systems with business objectives, companies can ensure that employees are not only engaged but also working toward organisational success. As Raj explained: *"When the system is properly aligned, employees are working on the same targets and goals, which makes it easier for the organisation to move forward cohesively."*

Additionally, gamification provides organisations with a valuable tool for data collection and performance tracking. Companies can gather insights into employee behaviours, productivity trends, and skill development, allowing them to make more informed decisions regarding training, incentives, and career development.

5.4.4.4 Negative Effects and Risks

While gamification offers numerous benefits, participants highlighted several inherent risks that, if not carefully managed, can undermine its potential impact. These risks span across issues such as unhealthy competition, unethical behaviour, and challenges in maintaining a long-term strategic focus.

Drawing on the interviews, one of the risks that arose around gamification was the potential to drive unethical behaviour. Wayne remarked: *“If you don’t set it up right and explain why and get alignment with all staff, it can very quickly drive their own behaviour to the point of moving tooling to the wrong places to achieve a short-term goal without looking at the long-term goal.”* This concern underscores the importance of properly framing gamification within the broader organisational objectives to ensure that employees are motivated to make decisions that support both immediate and long-term goals.

Wayne further elaborated: *“You win almost at all costs. And even if it comes to cheat codes and the likes.”* Using a video game term, he highlighted a deeper concern about the integrity of the gamification process, where employees may resort to shortcuts or manipulation to gain rewards, potentially creating a toxic workplace culture where the focus is on winning at any cost, rather than collaboration and ethical behaviour.

Another risk is the focus on numbers, which can sometimes drive behaviour that prioritises achieving targets over improving processes. Wayne raised the concern: *“What my concern was, that’s what I’m talking about. If you look at the people issues behind processes and creating those, a classic one is... if you chase, chase, chase the whole... you start to run into that area, in my view, between allowing somebody to stop a process to root cause a problem solve versus running to meet a score.”* This highlights the risk that, in pursuit of hitting numerical targets, employees might ignore underlying process inefficiencies or quality concerns, leading to poor decision-making and long-term inefficiencies.

While internal competitiveness can be a powerful motivator, Wayne warned about the potential for unhealthy competition: *“Yeah...It drives immediate behaviour and*

the level of competition that I think is unhealthy." Sthe shared similar concerns, saying: *"So sometimes you'll see that there's a not sharing of information as we should be, because we should be learning from each other."* Participants highlighted that when gamification fosters an environment where employees view one another as competitors, rather than collaborators, it can lead to a lack of information sharing, which is vital for continuous improvement and organisational growth.

Sthe also highlighted the risks when competition turns destructive: *"The two work together, so if you want to make them compete, is that really going to help the [plant] the way it starts sabotaging each other?"* This speaks to the potential for employees to undermine their colleagues, fostering a culture of rivalry that can hurt the overall team dynamic and hinder collaboration.

Further emphasising the negative effects of unhealthy competition, Sthe reflected: *"I'll do everything that I can that I push it on to the next person where that's not the right approach."* Yunus echoed this: *"You know, are they really competing? Well then do they start holding each other back, especially if you've got processes that are complementary to each other or feed into each other?"* This highlights the adverse impact of competition when it fosters a sense of rivalry that leads to blame-shifting and a lack of accountability, ultimately harming the workplace culture and productivity.

Sthe also added: *"So sometimes you'll see that there's a not sharing of information as we should be, because we should be learning from each other, and it becomes competitive in that today if I share my best practice, then someone else is doing it and they're improving,"* highlighting the risks of unhealthy competition where employees may withhold information or not share best practices, undermining the benefits of collaboration and knowledge sharing

Additionally, Tanya shared: *"Where it became unhealthy is where you know one department as such could pass on their inefficiencies or their rejects to another department. And then that one gets penalised because they make the end product."* This underscores the dangers of competition when it leads to departments focusing on beating others at the expense of working together towards common goals.

Along with the behavioural risks, technology-related challenges were frequently mentioned during the interviews. Sthe raised a concern regarding the technological constraints faced by older plants: *"My [plant] is like 60-70 years old. The technology that we're using is very old. Guys need to pull hoses to connect up tanks where you*

have the newer breed that you push a button and the process just runs.” This highlights the issue of legacy systems that may not be capable of supporting more modern gamification solutions, posing a barrier to effective implementation.

Dora also reflected on the technology gap: *“I think I wouldn’t say advances in technology, because I think we are still lagging a bit behind as South Africa... we’re still dealing with plants where plant monitoring for plant productivity was still paper-based.”* This underscores the gap in technological infrastructure, which limits the ability to fully integrate and take advantage of gamification systems in certain environments.

These technological challenges create a hurdle, especially in South Africa, where Dora emphasised that while countries like Brazil and China have fully automated systems, South African plants remain behind in terms of automation. *“You have the likes of Brazil, where an entire factory end-to-end supply chain is fully automated, but when it comes to plants within the South African space and even the entire Africa, I mean, if South Africa is not advanced, it means that the same holds for other countries within the continent.”*

5.4.5 Leadership Perspectives and Strategic Implications

Leadership was repeatedly highlighted by participants as an enabler of gamification. Many participants emphasised that for gamification to be successful, strong leadership support is essential, not only for ensuring buy-in but also for ethical implementation. Without committed leadership, gamification initiatives are often perceived as gimmicks or superficial efforts that fail to engage employees in a meaningful way.

Deon emphasised the importance of leadership in driving engagement, saying: *“If leadership doesn’t take it seriously, employees won’t either. It has to be embedded in the culture, not just rolled out as another programme.”* This view underscores the need for leadership to fully commit to gamification, embedding it into the company’s core culture rather than treating it as an isolated initiative.

Leaders are not only responsible for approving and championing the use of gamification, but also for ensuring that the values of gamification align with company goals and that ethical considerations are incorporated. Mark stated, *“Leadership needs to set clear objectives for gamification and ensure the rules are fair and aligned with the company’s values. Otherwise, it can easily turn into something that demotivates rather than motivates.”* This reflects the importance of ensuring ethical

implementation and making sure that gamified systems do not inadvertently promote unethical behaviours.

5.4.5.1 Leadership Support for Gamification

The interviews indicate that effective leadership in gamification requires more than just initial approval, it demands ongoing engagement and a strategic vision. According to Dora : *"I think it has to go with the leadership that you actually have within the organization and their drive towards innovation and introducing technology to actually advance and help them with competitive advantage."* This active involvement ensures that gamification remains relevant and impactful throughout its lifecycle.

Steve added: *"it can lose traction if not if not, given the significant weight and importance from leadership, and it does have the potential to become stale. And when it becomes stale, it loses its drive as a motivating factor. And I think the response to that needs to be an emphasis on continuously improving the game."* Thus, participants place the responsibility on leadership to not only introduce gamification but to ensure its continuous evolution, adapting to changing needs and challenges.

5.4.5.2 Challenges for Leadership in Gamification

While leadership support is critical to participants, leaders themselves face numerous challenges when implementing gamification within their organisations. One key challenge is cultural resistance, particularly in more traditional industries where gamification might be viewed as too unconventional or unnecessary. Raj noted: *"There's always going to be scepticism, especially in more traditional industries. Leaders need to convince their teams that gamification is about enhancing, not replacing, the work they do."*

Another challenge lies in balancing short-term goals with long-term vision. Ray observed: *"Leaders have to ensure gamification doesn't become a short-term tactic. It should be part of a broader, long-term strategy to enhance employee engagement and organisational performance."* This perspective shows that gamification should not be used as a quick fix but as part of a larger, sustained approach to improve both engagement and performance.

5.4.5.3. The Top-Down Approach to Gamification

A top-down approach is essential for ensuring gamification is successfully integrated into the organisation. Edward explained: *You can't ignore the top down driver, for*

example, the CEO, the CEO has to be engaged in the process. Has to be showing the recognition giving the one-on-one." Moosa added: "I think gamification doesn't work if it's bottom up. It has to be top down because if it if it's bottom up then there's not enough scale and influence at that level to make it impactful, you know you might be doing gamification in small buckets in your area, but in order to scale, it has to have belief in it, from an executive level."

In contrast, Raj stressed that it's not just about executive support, but also about employee involvement: *"It's not just executive support. It's people themselves."* This suggests that employee buy-in is just as critical as leadership support, highlighting the need for collaborative and bottom-up engagement.

In this context, leaders must actively participate in gamified systems, encouraging their teams to engage with the process and leading by example. Mark stated: *"If the top level does not buy into it, it becomes very difficult to cascade it via the HR department to the organization. We gotta buy it in and the executive level has to see the benefit of doing it at that level."*

5.4.4.4 Strategic Implications for Leadership

Leadership's role in gamification is not just about implementation but also about aligning gamification with organisational strategy. Sameer emphasised: *"But the most important one is aligning your strategy and your executives so that they can see visibly, or they can figure out for themselves how the gamification will actually support the competitive advantage and the strategic objectives of the business."* Additionally Dora said: *"it's helping drive the entire organizational strategy, I think it would because then you would have the big level strategy being cascaded down even to an operator level, to a forklift driver level and interpreted in a language that they're then able to understand what their entire organization is driving."*

Participants are of the opinion that for gamification to be effective, it must be incorporated into the company's broader goals of improving employee performance, driving innovation, and enhancing organisational culture. Leadership plays a pivotal role in ensuring that gamification is seen as a long-term investment and not a short-term initiative. Without strategic alignment, gamification risks becoming just another disconnected tool, rather than an integrated element of the company's growth.

5.4.4.5 Theme Summary

The success of gamification is deeply influenced by the active involvement and strategic foresight of leadership. As highlighted, without strong leadership support,

gamification initiatives are at risk of being viewed as short-lived trends rather than transformative business strategies. Effective leadership is key in embedding gamification within the company culture, ensuring that it aligns with both business goals and employee needs. However, beyond leadership, there are contextual influences and factors within the strategic environment that can significantly impact the implementation and effectiveness of gamification. These factors play a pivotal role in shaping how gamification is perceived and adopted, or if it is even a consideration. The next section will delve into these contextual influences and the strategic environment, examining how external and internal factors contribute to the broader success or failure of gamification initiatives.

5.4.5 Contextual Influences and Strategic Environment

This theme examines both external and internal factors, such as market pressures, organisational culture, and resource constraints, that provide the broader context in which gamification is perceived and implemented. It underscores how the environment in which an organisation operates influences the adoption and success of gamification strategies.

5.4.5.1 External Factors

The external environment plays a significant role in how gamification is perceived and implemented. Paul remarked: *"But the biggest issue is still always price, price, price,"* illustrating how market price remains a key focus, potentially making gamification seem less urgent or essential in the face of competitive pricing pressures. Similarly, Ahmed stated: *"Human nature is that if I get the best price, I get most money."* This reinforces the importance of cost in the South African market and how organisations often prioritise price competitiveness over more strategic initiatives like gamification.

However, some participants acknowledged that global competition drives a need for innovation. Tanya explained: *"There is more product coming in from outside of South Africa. If you look at how the rest of the world operates, they operate very competitively."* This suggests that South African organisations must not only focus on local competitiveness but also be aware of the need to align with global standards and best practices. Wayne also noted: *"When you export, you're naked. There is no armour that you're wearing,"* reflecting the need for South African companies to remain competitive on a global stage, where gamification could provide a strategic advantage.

Despite these challenges, Sthe pointed out: *"We benchmark ourselves against the likes of [a global competitor],"* illustrating that some companies are looking beyond local pressures and striving for global standards. This desire to compete globally suggests that gamification may eventually become a key component in aligning South African businesses with global competitiveness.

5.4.5.2 Internal Factors

Internally, resource constraints are a significant challenge that many South African businesses face when implementing gamification. Ahmed mentioned: *"The other thing is resources... everyone operates within tight budgets."* The budget limitations for many South African companies can hinder their ability to invest in gamification platforms or systems, especially when the cost of implementation can be significant. For example, Sameer described: *"It was 2 million to set up the platform and an ongoing fee of a million rands just to get the gamification platform working....I didn't see the value in that to be honest"* Such high upfront costs can deter organisations from pursuing gamification, particularly when they are not immediately sure of its ROI.

Despite these constraints, Sthe emphasised that having the right mindset and culture is essential for successful gamification adoption, stating: *"It requires that go-getter mindset for it to work."* This highlights the importance of leadership and organisational culture in making gamification effective, even when resources are limited. Raj also added: *"Culture is a big word, but it's the attitude of being able to have fun at work,"* indicating that the organisational environment must be conducive to the playfulness and engagement that gamification brings.

Moreover, Wayne explained: *"Communication is such a big issue for me. What is said is not always what's heard."* This highlights the necessity for clear and effective communication when introducing gamification to ensure that all employees understand the benefits and objectives of the initiative.

5.4.5.3 Strategic Environment

The strategic environment also shapes how gamification is integrated within an organisation. Paul stated: *"You need resources to actually process some of those things."* emphasizing that gamification needs to be seen as a strategic investment rather than just a tool for engagement. Similarly, Wayne expressed: *"Gamification in my view is fine for the short term. Quick response reflects stuff. I don't know that it's so wise in the longer term."*

Moosa also emphasised that leadership support is a crucial factor for success, saying: *"Definitely because you need both the capital investment... leadership support is a key enabler."* This aligns with the broader theme that leadership buy-in and strategic vision are essential for gamification to be effectively implemented and integrated into long-term business strategies.

5.4.5.4 Theme Summary

In summary, both external and internal factors play pivotal roles in shaping the adoption of gamification in South Africa. Market pressures, especially price competitiveness, and resource constraints are significant external challenges, while organisational culture, communication, and leadership are key internal enablers. The strategic environment must align gamification with both business goals and global competitiveness. As South African companies face increasing pressure to innovate and compete on a global scale, gamification has the potential to drive engagement and performance, provided it is implemented thoughtfully within the strategic context.

5.4.6 Looking Forward

While much of each interview centred on the current use and perceptions of gamification, the participants offered more detailed insights when reflecting on its future potential. Their responses revealed a stronger sense of consideration and optimism for how gamification could evolve, expand, and integrate into their organisations and manufacturing in general in future. Although participants acknowledged the existing challenges and risks associated with gamification, their views on its future highlighted significant opportunities for growth, particularly in aligning with long-term strategic goals. This section delves into these forward-looking perspectives, emphasizing the need for careful planning and key considerations for successful implementation. The contrasting views on gamification's role in the future reflect cautious optimism, with an understanding that its potential is dependent on thoughtful design, alignment with organisational priorities, and mitigation of known risks.

5.4.6.1 Emerging and Proposed Uses

As gamification evolves, the potential for it to be used in new and diverse areas within organisations is increasingly being recognised. Many participants see gamification as an opportunity to expand beyond just employee performance management to include customer engagement, innovation, and even supplier relations.

Deon highlighted a key opportunity for gamification to extend into supplier relationships: *“if you can use it to motivate them (supply chain), then I think you're going down the down the right path. You know, like you want them engaged and then out of engagement comes a lot of motivation to get somewhere.”* Raj also added: *“. I think if you extend that your customers and your suppliers, you build that sort of human relationship beyond just your own corporate environment.”* This perspective explores the idea that gamification could be leveraged as a tool for building stronger, more collaborative relationships with external stakeholders, aligning with growing trends of customer-centric strategies.

On the other hand, Yunus expressed caution regarding gamification's applicability in all organisational areas, emphasising that its success might depend on the nature of the department or function: *“Each department is so different from the other. So it's difficult to compare between employees, especially within different departments. And then you could then look at it as per department, but then you breaking it down into so many small, you have your production departments, then you have your quality control, but then you have upstairs in the office and your sales team, ...but we found it to be a bit complicated to implement.”* This is an important consideration, suggesting that the suitability of gamification is context dependent. Some departments, particularly those with complex or non-quantifiable tasks, may find it difficult to adapt.

Overall, while there is enthusiasm for gamification's expansion, there is also an underlying recognition that its utility might vary depending on the business function or the department's needs.

5.4.6.2 Key Implementation Considerations

For gamification to be successfully implemented and sustained, participants shared several key considerations. These include customisation, alignment with organisational culture, leadership support, and providing the necessary resources for long-term success.

A consideration, shared by Sthe, was the need for customisation: *“those are the kind of gaps that are there in the holes in this ranking system that it that because it doesn't discriminate between your [areas] and what size they are, how they actually run. Some would see it as not a fair measure of ranking [areas] against each other that are completely different as well.”* This reflects the importance of personalisation

when applying gamification, ensuring that the system resonates with the workforce and is aligned with team goals and challenges.

Moreover, Raj emphasised the importance of cultural readiness and the role of leadership in driving gamification: *“It’s not just executive support. It’s about people themselves. They need to believe in the concept for it to work effectively.”* Here, Raj draws attention to the need for a cultural shift that embraces gamification. For it to take root, it cannot simply be imposed from the top down; employees need to feel a sense of ownership and belief in its potential. This is supported by Tanya, who echoed that without leadership buy-in and alignment, gamification would struggle: *“For me, it’s around leadership and culture. If leaders are not behind it, if from a culture perspective it’s not embedded in the way you do things, if it’s an add-on, it doesn’t work.”*

In addition to culture and leadership, Brian stressed the need for the necessary technological and financial resources: *“It’s about the right resources and systems to support gamification. Without the right tech, you’re just wasting time trying to integrate something that won’t scale.”* This points to the infrastructural and resource considerations that are imperative for successful implementation. If the technology isn’t robust or scalable, the system will be inefficient or become obsolete over time. Gamification company representatives echoed this concern, noting that South African organisations are in the early stages of adopting gamification, with manufacturing lagging behind sectors like retail and education. They also highlighted that many companies face challenges integrating gamification due to cultural resistance and a lack of technical expertise. For gamification to succeed, organisations need to overcome these barriers, often requiring a cultural shift and investment in building technical capabilities.

Finally, Sameer shared an important point about the pace of adoption: *“Not every company is ready to implement gamification yet, especially in industries with legacy systems or a lack of digital infrastructure.”* This is a sobering consideration, particularly for businesses that are not technologically advanced or are constrained by existing systems.

5.4.6.3 Strategic Vision and Growth

Looking to the future, participants shared their thoughts on how gamification would augur in terms of strategic growth and long-term objectives. Wayne saw gamification as a tool for driving short-term wins, but with reservations about its sustainability in

the long run: *“It can drive quick results, but it’s crucial that we don’t lose sight of the long-term strategy. Gamification should evolve as the company evolves.”* This points to the risk of gamification becoming a short-term solution, with potential limitations if not continuously aligned with the company's strategic direction.

On the other hand, Bruce expressed concerns that focusing solely on numbers and competition might harm long-term outcomes: *“Chasing the number is fine in the short term, but we need to ensure that it aligns with the broader goals of the company. There’s a risk it could become more about winning than improving.”* Bruce’s caution is supported by others, such as Ray, who pointed out that in the absence of clearly defined goals and a well-rounded approach, gamification could undermine efforts toward sustainable growth: *“If you don’t write the rules properly and set clear objectives, gamification could go off track and actually become counterproductive.”* This reflects the need for thoughtful planning, including clear objectives, communication, and a holistic view of the company’s long-term goals.

Wayne also highlighted the importance of gamification aligning with broader strategic goals: *“If you don’t communicate the why behind gamification, it can lead to the wrong behaviours. It’s not just about getting points, it’s about aligning with the company’s vision and culture.”* This aligns with the broader strategic vision for gamification, suggesting that for it to drive growth, gamification must be embedded within the company’s core values and goals.

5.4.6.4 Gamification as a Competitive Advantage

All participants were strongly in favour of gamification as a tool for competitive advantage, but they also noted that it needs to be managed well to fully realise its potential. They highlighted its capacity to foster visibility, engage employees, and align behaviours with long-term strategic goals. These views show that, with the right approach, gamification can play a critical role in enhancing competitive positioning.

Some of the key quotes that illustrate these views are as follows :

Wayne: *“Yeah, but I don’t think it gives you an advantage...if you if you not embracing and engaging with it, you really don’t have one of the, I guess, fundamental building blocks of competitiveness in the global environment. “*

Sthe: *“By integrating gamification, you’re essentially creating a framework for improving performance across the board, which gives us an edge in a competitive market.”*

Tanya: *"I think that gamification would add value to manufacturing because manufacturing is based on that it's based on targets, It's based on objectives, it's based on specifications, it's based on efficiencies, yeah. ... It'll create this healthy competitive nature."*

Raj: *"Again, it differentiates you from your competitors, right? So if you're doing something that's more fun that people wanna participate in. That's closer to how people prefer to do things, they will choose you over your competitor."*

Ahmed: *"that's where your that's where your advantage comes. Because no matter what, ... all your competitors have the same access. ...but to try to improve is what your staff can give you. It would improve our competitive advantage, definitely."*

Participants viewed gamification as a powerful tool for improving various aspects of business, from employee engagement to performance, leading to a competitive advantage. However, even those who strongly support gamification agree that careful implementation is essential to avoid the potential risks highlighting that its success depends heavily on the way it is used.

5.4.6.5 Theme Summary

Looking forward, gamification offers significant potential for growth and competitive advantage, provided it is implemented thoughtfully. The key to its success lies in customising its application to fit the specific needs of different departments, aligning it with the company's strategic vision, and providing the necessary resources for sustainability. While there is optimism about its role in future growth, concerns about its short-term focus, potential for unhealthy competition, and cultural readiness must be addressed to unlock its full potential.

5.5 Summary of Key Findings

This chapter presented the findings from the research on how gamification is perceived, adopted, and leveraged in South African manufacturing, with a focus on its role in enhancing competitive advantage. The research was conducted through interviews with senior management in the sector, employing an inductive approach to coding and developing themes that emerged from the data.

The analysis revealed six major themes: Making Sense of Gamification, Uses of Gamification, Challenges of Gamification, Effects of Gamification, Leadership Perspectives and Strategic Implications, Contextual Influences and Strategic Environment and Looking Forward. These themes were derived from a detailed

process of data collection, observation, and coding, which allowed for a deep understanding of the current state and future potential of gamification in the industry. These themes were then linked to the research question of this study.

This chapter serves as a foundation for the analysis to be presented in chapter six, where these findings will be connected to existing literature and theoretical frameworks. The key themes and their interconnections with the research questions provide a detailed picture of how gamification is currently viewed and used, and the opportunities and risks that lie ahead for its future in South African manufacturing.

Chapter 6: Analysis of Findings

In this chapter, the results of the data are analysed. As established, the focus of this study is on exploring how gamification is perceived, adopted, and leveraged by leaders in the industry, as well as its potential role in enhancing competitive advantage in the manufacturing environment. The analysis is structured around the research questions outlined in chapter three, which centre on understanding the current uses of gamification, the perceptions of key stakeholders, the barriers and enablers to its implementation, and the overall impact of gamification on competitive advantage.

Each section of the chapter will draw from the key themes identified in chapter five: Making Sense of Gamification, Uses of Gamification, Challenges of Gamification, Effects of Gamification, Leadership Perspectives and Strategic Implications, Contextual Influences and Strategic Environment and Looking Forward. These themes are explored in relation to the existing literature, with particular attention given to leadership perspectives, organisational culture, and the strategic implications of gamification. While the findings reflect some awareness and adoption of gamification, they also highlight areas where further development is needed, particularly in aligning gamification with long-term organisational goals and overcoming cultural and technological barriers.

The analysis is guided by the research questions, with a focus on synthesising the interview findings within the context of the broader theoretical frameworks and literature discussed in chapter two. This will ensure a cohesive narrative that connects the practical insights from the interviews with existing research, offering a deeper understanding of the factors influencing the adoption and success of gamification in South African manufacturing.

Lastly, the chapter identifies gaps in the literature and provide recommendations for future research, contributing to a more nuanced understanding of gamification's potential and its role in driving competitive advantage in the manufacturing sector.

6.1 Linking Themes to the Research questions

To guide the analysis, the themes identified were linked to the study's research questions. Table 5 below presents the direct connection between the research questions and the relevant themes that emerged during the data collection and analysis, along with explanations for each link.

Research Question	Relevant Themes	Why These Themes Are Linked to the Research Question
<p>1. How is gamification currently being used within South African manufacturing firms?</p>	<ul style="list-style-type: none"> • <i>Making Sense of Gamification</i> • <i>Uses of Gamification</i> 	<ul style="list-style-type: none"> • <i>Making Sense of Gamification</i> helps understand how companies define and interpret gamification in practice. • <i>Uses of Gamification</i> explores the actual application of gamification within manufacturing firms.
<p>2. What are the current perceptions of gamification among South African manufacturers?</p>	<ul style="list-style-type: none"> • <i>Making Sense of Gamification</i> • <i>Leadership Perspectives and Strategic Implications</i> • <i>Effects of Gamification</i> 	<ul style="list-style-type: none"> • <i>Making Sense of Gamification</i> provides insight into how gamification is understood and viewed by participants. • <i>Leadership Perspectives and Strategic Implications</i> reveals how leadership views gamification and its relevance to their strategic goals. • <i>Effects of Gamification</i> helps understand the perceived impacts of gamification, which shapes perceptions.
<p>3. What are the barriers to and enablers of effective gamification implementation in South African manufacturing?</p>	<ul style="list-style-type: none"> • <i>Challenges of Gamification</i> • <i>Leadership Perspectives and Strategic Implications</i> • <i>Contextual Influences and</i> 	<ul style="list-style-type: none"> • <i>Challenges of Gamification</i> identifies the obstacles hindering gamification. • <i>Leadership Perspectives and Strategic Implications</i> shows how leadership affects gamification success. • <i>Contextual Influences and Strategic Environment</i> describes the external and

	<i>Strategic Environment</i>	internal factors affecting implementation.
4. How does gamification contribute to competitive advantage in the manufacturing sector?	<ul style="list-style-type: none"> • <i>Looking Forward</i> • <i>Uses of Gamification</i> • <i>Effects of Gamification</i> 	<ul style="list-style-type: none"> • <i>Looking Forward</i> explores the future potential of gamification and its strategic role in gaining competitive advantage. • <i>Uses of Gamification</i> discusses current uses that contribute to competitive advantage. • <i>Effects of Gamification</i> explores the ongoing impacts that gamification has on competitive positioning.

Table 5 : Link Research questions to themes

6.2 Research question 1: How is Gamification Currently Being Used within South African Manufacturing Firms?

The implementation of gamification within South African manufacturing firms is varied, reflecting differing levels of maturity and managerial understanding. The findings suggest that gamification is in its early stages in most firms, with many managers reporting isolated and often experimental applications rather than fully integrated strategic initiatives. This aligns with the Gamification Maturity Model (GMM) proposed in chapter two, which categorizes gamification adoption into four stages: Basic Awareness, Early Adoption, Integrated Implementation, and Strategic Alignment (Hallifax et al., 2023; Burke, 2016; Patrício et al., 2018; Amaral & Peças, 2021; Teichert, 2019; Thordsen & Bick, 2023; Rackwitz, 2024).

The perceptions of managers indicate that while some organisations are experimenting with gamified systems, primarily in training, performance tracking, and engagement-driven initiatives, few have reached the level of full strategic alignment. Instead, gamification is often implemented at the departmental level, with limited cross-functional integration or long-term vision (Keepers et al., 2022; Schmidt, Manske, & Flatten, 2023).

6.2.1 Basic Awareness and Early Adoption

In the Basic Awareness stage, gamification is largely unrecognized as a structured engagement tool. Many managers interviewed had limited exposure to the concept or associated it solely with rewards-based incentive programs rather than intrinsic motivation mechanisms (Nacke & Deterding, 2017; Hallifax et al., 2023; Staller & Koerner, 2021). This is consistent with prior research suggesting that gamification remains underutilized in traditional manufacturing contexts due to a lack of awareness and clear implementation strategies (Schmidt et al., 2023; Keepers et al., 2022).

The Early Adoption phase is where most managers' experiences are situated. Here, gamification elements such as performance dashboards, team competitions, and digital training modules have been introduced, but they are often experimental and lack strategic depth (Hallifax et al., 2023; Patrício et al., 2021). Interview responses suggest that these applications tend to be short-lived due to limited managerial buy-in and inconsistent engagement from employees. One participant noted that they implemented gamification for tracking productivity, but it faded after a few months because diminishing leadership support reduced the momentum of the implementation.

This finding aligns with Keepers et al. (2022), who emphasize that without sustained leadership support and integration into business processes, gamification initiatives are at risk of stagnation. Furthermore, as noted in the literature, organisations at this stage often struggle to move beyond extrinsic motivators, such as points and leaderboards, to more sustainable, intrinsic motivators that drive long-term engagement (Werbach & Hunter, 2020; Hallifax et al., 2023; Staller & Koerner, 2021).

6.2.2 Integrated Implementation and Strategic Alignment

Only a handful of managers described applications that resemble the Integrated Implementation stage. These respondents worked for firms where gamification had been embedded within key performance areas, such as lean manufacturing initiatives, continuous improvement programs, and structured employee development pathways (Schmidt et al., 2023; Burke, 2016). For example, one respondent described how gamified systems had been leveraged to track employee participation in innovation-driven initiatives, creating a culture of engagement and shared learning. This echoes findings by Bahadoran et al. (2023), who demonstrated

how gamification enhances knowledge-sharing behaviours and contributes to sustained organisational learning.

At the highest level, Strategic Alignment, gamification is fully embedded in business processes and decision-making frameworks. However, no respondents indicated that their firms had reached this stage, suggesting a gap in maturity within the South African manufacturing sector. This supports previous research showing that gamification in manufacturing is still in a developmental phase, often driven by pilot projects rather than comprehensive strategies (Patrício et al., 2018; Keepers et al., 2022).

6.2.3 Managerial Perceptions and the Maturity Model

Another insight from the interviews is that managerial perceptions of gamification often align with their firm's maturity level. Managers in companies at the Basic Awareness stage expressed doubt, viewing gamification as a 'nice-to-have' rather than a strategic necessity. In contrast, those operating within the Integrated Implementation phase recognized its potential for employee engagement and performance optimisation but acknowledged that scalability remained a challenge.

Interestingly, managers who had a more developed understanding of gamification's role in workforce engagement tended to be in firms where leadership actively promoted technology adoption and innovation. This suggests that organisational culture and leadership commitment are critical enablers of gamification maturity, as highlighted in previous research (Hamari et al., 2014; Keepers et al., 2022).

6.2.4 Answering Research Question 1

Based on the findings, gamification in South African manufacturing is largely in the Early Adoption or Integrated Implementation phases, with few firms achieving full strategic alignment. The variability in implementation reflects differing levels of managerial understanding, organisational culture, and leadership support. While some managers recognize gamification's potential for competitive advantage, most firms have yet to integrate it into their broader business strategies.

The findings also highlight a disconnect between theoretical gamification frameworks and practical application within South African manufacturing. Many managers are unaware of gamification's full capabilities, resulting in fragmented adoption and inconsistent engagement.

6.3 Research question 2: What are the current perceptions of gamification among South African manufacturers?

This section examines how senior leaders in South African manufacturing perceive gamification, focusing on their understanding of the concept, perceptions of its strategic value, and concerns about its implementation. This section analyses the attitudes and beliefs of leaders with strategic influence, exploring how these perceptions influence gamification's role in the sector.

The analysis reveals that while many leaders acknowledge gamification's potential for improving employee engagement, motivation, and performance tracking, they vary significantly in their conceptual understanding and commitment to its strategic implementation. A notable finding is that despite nearly two decades of gamification research, many South African manufacturing leaders still exhibit uncertainty about its meaning, applications, and strategic value. Deterding et al. (2011) and Seaborn & Fels (2015) described gamification as a developing approach that was already demonstrating its potential impact. However, the findings of this study suggest that South African manufacturing leaders continue to grapple with the same conceptual challenges that were identified globally over a decade ago. Several challenges and concerns, such as scalability, fairness, and measurement, continue to hinder broader adoption.

By integrating SDT, RBV, and recent literature on gamification's business applications, this section explores the underlying factors that shape these perceptions and discusses their implications for the future adoption of gamification in South African manufacturing.

6.3.1 Making Sense of Gamification

The findings indicate that many South African manufacturing leaders engage with gamified processes without formally recognising them as gamification. The most commonly given examples of gamified elements included performance dashboards, production scorecards, reward-based incentives, and structured feedback mechanisms. However, these tools were often viewed as operational performance tracking mechanisms rather than components of a broader gamification framework. This reflects findings in the literature, where gamification is often adopted in fragmented ways within organisations, particularly in industries where its formal definition remains relatively new (Werbach & Hunter, 2020; Patrício et al., 2018; Seo et al., 2021).

Some leaders admitted having limited familiarity with the term "gamification" before the interviews, despite using practices that align with its principles. This suggests that gamification in South African manufacturing remains poorly defined and inconsistently framed at the leadership level. As previous research highlights, successful gamification adoption is often hindered by a lack of shared terminology and strategic intent (Gupta et al, 2022; Schmidt et al., 2023). In contrast, leaders who were more familiar with digital transformation initiatives were more likely to understand gamification as a structured tool rather than an informal engagement mechanism (Hallifax et al., 2023).

The variation in conceptual understanding suggests that gamification is still emerging in South African manufacturing leadership, mirroring broader global trends where its adoption is often incremental rather than transformational (Schmidt et al., 2023). A particularly striking issue is that the state of gamification adoption in South African manufacturing appears to be largely unchanged from earlier global studies conducted nearly a decade ago. Robson et al. (2015) and Seaborn & Fels (2015) noted that by that time, gamification was already showing promise in multiple sectors, and researchers were developing standard definitions and theoretical frameworks to guide its implementation. The findings of this study, however, suggest that South African manufacturing leaders are still in the early stages of understanding gamification, facing many of the same conceptual and definitional challenges identified in previous literature

6.3.2 Leadership Perceptions on Gamification's Strategic Value

A recurring theme in the interviews was that leaders differ in how they perceive gamification's role in business strategy. Some view it as a useful but optional engagement tool, while others see it as a potential enabler of continuous improvement, digital transformation, and employee motivation.

Leaders who viewed gamification as a secondary or tactical tool often associated it with short-term motivation rather than sustained workforce development. Many expressed concerns that gamification could be perceived as superficial or a gimmick, particularly if it was not linked to measurable business outcomes. These concerns align with literature suggesting that poorly implemented gamification can result in temporary engagement spikes but fail to drive long-term behavioural change (Burke, 2016; Schöbel et al., 2020).

Conversely, leaders who had experience with technology-driven engagement strategies were more likely to view gamification as a structured and scalable solution. Successful gamification implementation is often linked to firms that have already embraced Industry 4.0 and digital transformation efforts (Leite et al., 2023). These leaders saw potential in gamification's ability to reinforce performance culture, enhance collaboration, and support learning and development. Their perspectives align with SDT, which suggests that gamification can increase intrinsic motivation by enhancing employees' sense of autonomy, competence, and relatedness (Deci & Ryan, 2000; Nacke & Deterding, 2017).

Despite these differences, most leaders agreed that gamification's success depends on leadership commitment and integration into existing business processes. Those who had experimented with gamified engagement tools but did not actively sustain them described high initial enthusiasm followed by disengagement over time. This reflects a key challenge identified in the literature, gamification requires ongoing leadership reinforcement to maintain its effectiveness beyond initial implementation (Gupta et al, 2022; Buell et al., 2019; Patrício et al., 2021).

Another critical insight was that leaders who linked gamification to business performance metrics were more likely to support its adoption. Where gamification was perceived as a soft engagement tool with unclear ROI, leaders were more hesitant to endorse it. However, in firms where gamification was integrated into KPIs, training, or operational efficiency programs, leaders expressed greater confidence in its value. These findings support research suggesting that measuring gamification's impact is essential for its long-term credibility (Werbach & Hunter, 2020; Hallifax et al., 2023).

6.3.3 Concerns About Gamification: Risks and Limitations

While many leaders recognised gamification's potential, several expressed concerns regarding sustainability, fairness, and unintended consequences.

A key issue raised was the potential for gamification to create competition at the expense of collaboration. Some leaders observed that while leaderboards and ranking systems could drive engagement, they might also discourage teamwork or create resentment among lower performers. This concern aligns with prior research, which warns that gamification can sometimes reinforce unhealthy competition rather than cooperative behaviour (Schmidt et al., 2023).

Another recurring concern was the risk of gamification being perceived as manipulative rather than empowering. Some leaders noted that employees might disengage if they felt that gamification was being used as a surveillance or micromanagement tool rather than a means of fostering motivation. Concerns that gamification could be perceived as a digital surveillance tool rather than an engagement mechanism were echoed in Seo et al.'s (2021) study, which found that manufacturing employees often resist gamification when they believe it is being used to monitor productivity rather than to enhance job satisfaction.

Participants also highlighted concerns where employees lose interest in reward-based systems that do not evolve over time. This aligns with Dah et al. (2024) and Chou (2019), who argue that gamification systems relying solely on extrinsic incentives often fail to drive long-term engagement. Their research found that without continuous updates, meaningful goals, and deeper intrinsic motivators, employees begin to disengage, viewing gamification as a routine performance tracking tool rather than a source of motivation.

Leaders in this study observed a clear generational divide in gamification engagement. Younger employees were seen as more willing to adopt gamified performance tools, while older employees were more sceptical, often questioning the necessity of playing games in professional settings. These findings align with Koivisto and Malik (2021), who found that older employees typically engage less with digital gamification, preferring structured performance evaluation over interactive leaderboards or point-based incentives.

Several leaders also expressed uncertainty about how to scale gamification across multiple departments without it becoming overly complex or resource intensive. While gamification had seen success in isolated use cases, such as performance tracking or training modules, few leaders had a clear roadmap for extending it to broader workforce engagement strategies. This challenge is consistent with findings in previous research, where firms struggle to transition from pilot projects to full-scale gamification adoption (Hamari et al., 2014; Keepers et al., 2022).

A final concern was the difficulty of measuring gamification's long-term impact. Many leaders acknowledged that while gamified initiatives often generated initial excitement, it was challenging to assess whether these efforts translated into sustained improvements in employee performance or business outcomes. This highlights a gap in South African manufacturing leadership's ability to track and

evaluate gamification beyond short-term engagement metrics, reinforcing calls in the literature for more structured evaluation frameworks (Burke, 2016; Hallifax et al., 2023; Keepers et al., 2022).

6.3.4 Answering Research Question 2

The findings indicate that there is widespread recognition of gamification's potential to enhance motivation and employee engagement. However, the formal understanding of the term "gamification" is still emerging, and many leaders use gamification-related tools without explicitly naming them as such. While some leaders see gamification as a valuable tool for enhancing motivation, collaboration, and performance tracking, others perceive it as an optional initiative with limited strategic value (Nacke & Deterding, 2017; Schmidt et al., 2023).

A key concern is that despite the research highlighting gamification's effectiveness, many leaders continue to struggle with its conceptualisation and integration into business strategy (Seaborn & Fels, 2015; Hamari et al., 2020; Keepers et al., 2022). This suggests a gap between theoretical understanding and practical application, aligning with previous studies that highlight inconsistent adoption across industries (Patrício et al., 2018).

Leadership commitment emerged as a defining factor in how gamification is perceived. Firms where gamification was embedded into structured business processes with visible leadership support, were more likely to see sustained benefits, while those that treated it as a short-term engagement tool experienced rapid disengagement (Gupta et al, 2022; Buell et al., 2019; Hallifax et al., 2023; Patrício et al., 2021). Additionally, concerns regarding generational readiness, scalability, fairness, and sustainability remain key barriers, with leaders questioning whether gamification fosters long-term behavioural change or merely temporary participation spikes (Gupta et al, 2022; Schöbel et al., 2020; Koivisto & Malik, 2021; Çera et al., 2022; Leite et al., 2023).

These perceptions suggest that while some leaders acknowledge gamification's potential, a lack of conceptual clarity, strategic alignment, and measurable impact limits its widespread adoption.

6.4 Research Question 3 – What Are the Barriers to and Enablers of Effective Gamification Implementation in South African Manufacturing?

This section explores both the barriers to and enablers of gamification implementation in South African manufacturing. The focus is on examining how

organisational culture, leadership support, and available resources either facilitate or hinder the adoption of gamification systems. As established in chapter two, key barriers include organisational resistance, leadership scepticism, and resource limitations, while clear communication, strategic alignment, and leadership advocacy act as critical enablers (Hamari et al., 2014; Patrício et al., 2021; Keepers et al., 2022). These challenges are particularly relevant in the South African context, where cultural perceptions, technological readiness, and financial constraints play a crucial role in shaping how gamification is adopted (Guenther & Weingart, 2017; Abubakre et al., 2021).

Comparing the findings and literature reveals strong alignment in recognising leadership commitment, strategic integration, and resource investment as fundamental to success. However, South African manufacturers face unique barriers, including legacy infrastructure, traditional leadership structures, and divided attitudes towards technology adoption (Guenther & Weingart, 2017; Abubakre et al., 2021). By understanding these factors, this section assesses implementation challenges and identifies strategies to promote successful gamification initiatives in the South African manufacturing industry.

6.4.1 Cultural readiness for Gamification

Many participants expressed concern over the cultural readiness for gamification, particularly in more traditional manufacturing environments where employees are used to structured, predictable processes. In some instances, gamification was seen as a superficial, external addition that has no influence on core work processes. The study findings indicate that cultural resistance plays a significant role in shaping gamification adoption in South African manufacturing. While gamification research has largely focused on its psychological and behavioural benefits, the South African context presents additional challenges linked to workplace norms, hierarchical structures, and generational differences in technology adoption.

Ubuntu strongly influences workplace interactions in South African manufacturing presenting both a challenge and an opportunity for gamification implementation (Abubakre et al., 2021; Chetty & Price, 2024). Many gamification models are designed around individual performance metrics and competitive ranking systems, which may conflict with the collaborative values prioritised in South African workplaces (Riar et al., 2022). If gamification is not carefully tailored to reinforce team-based collaboration rather than individual competition, it may struggle to gain

widespread acceptance among employees (Werbach & Hunter, 2020; Riar et al., 2022).

Participants' view on generational differences further shape attitudes toward gamification adoption. Younger employees were considered to be more receptive to digital gamification tools, while older employees were considered to be resistant, often viewing gamification as a distraction or an unnecessary intervention. These findings align with Koivisto and Malik (2021), who argue that older employees tend to engage less with digital gamification tools due to lower digital fluency and a preference for structured performance reviews. Similarly, González-González et al. (2022) found that younger employees prefer competitive elements like leaderboards and real-time feedback, whereas older employees respond better to structured goal setting and milestone-based progression.

Additionally, several participants expressed concerns that gamification could be perceived as a surveillance tool rather than an engagement mechanism, reinforcing existing scepticism about digital workforce monitoring. This aligns with previous studies indicating that if gamification is perceived as a means of micromanagement rather than empowerment, employees are likely to resist its implementation (Schmidt et al., 2023).

6.4.3 Leadership Perspectives and Strategic Implications

Leadership emerged as playing a dual role in both the barriers and enablers of gamification adoption in South African manufacturing. Leadership emerged as both a barrier and an enabler of gamification implementation in South African manufacturing. While some leaders recognised gamification's potential as a workforce engagement tool, others expressed scepticism regarding its long-term strategic value. The findings suggest that without strong leadership support, gamification initiatives tend to be implemented in isolated pilot projects that lack continuity or broader organisational buy-in.

Many leaders viewed gamification as a temporary engagement mechanism rather than a structured business tool. This perception often resulted in gamification being deprioritised once the initial enthusiasm declined, aligning with Schmidt et al. (2023) view that for gamification to be sustained, leadership must not only approve its implementation but also actively drive its integration into performance management frameworks and operational strategies. The lack of strategic alignment in some firms resulted in gamification being perceived as a novelty rather than an essential

component of workforce engagement, reinforcing previous research that highlights the importance of continuous leadership commitment in gamification success (Gupta et al, 2022; Patrício et al., 2021).

Conversely, in firms where leadership actively championed gamification, there was a greater emphasis on aligning it with digital transformation efforts, training programs, and operational efficiency measures. This reflects global trends where gamification is more successfully implemented when it is positioned within a structured performance management framework rather than as a standalone initiative (Schuldt & Friedemann, 2017; Hallifax et al., 2023). Leaders who viewed gamification as part of a broader digital transformation effort rather than a discretionary engagement tool were more committed to its long-term sustainability.

6.4.4 Resource Constraints and Digital Readiness

Financial and technological constraints were consistently highlighted as major barriers to gamification implementation in South African manufacturing. While global manufacturers have successfully integrated gamification into Industry 4.0 strategies, many South African firms still operate with outdated digital infrastructure that limits their ability to adopt gamified workforce engagement tools.

Several participants expressed concerns about the costs associated with implementing gamification platforms, particularly in firms where budget constraints limit investment in non-essential technologies. Similarly Van der Heijden et al. (2020) suggest that high implementation costs are a significant deterrent to gamification adoption, particularly in cost-conscious industries such as manufacturing. The absence of clear performance measurement frameworks further compounds this challenge, as firms struggle to justify long-term investment in gamification without tangible evidence of its impact on productivity and employee engagement (Hamari et al., 2020; Keepers et al., 2022; Anuradhani et al., 2024; Latino et al., 2023).

While participants responses confirmed that some firms have successfully integrated gamification into existing digital platforms and workforce training programs, others remain hesitant due to the high costs associated with gamification software and system integration. The findings suggest that gamification is more likely to be successfully implemented when it is integrated into broader digital transformation initiatives, rather than treated as a standalone engagement strategy.

6.4.5 Answering Research Question 3

The findings indicate that gamification adoption in South African manufacturing is shaped by leadership, cultural perceptions, and resource availability. While global research supports gamification as an effective workforce engagement tool, its success in South African manufacturing is contingent on contextual alignment with workplace norms and leadership commitment (Hamari et al., 2020; Patrício et al., 2021).

Leadership support emerged as a critical determinant of gamification success. Without strong advocacy, gamification is often implemented in fragmented ways, leading to low engagement and eventual abandonment (Schmidt et al., 2023). Additionally, generational resistance remains a key challenge, with older employees less inclined to adopt gamification, particularly when it is framed as a competitive ranking system rather than a structured development tool (Koivisto & Malik, 2021; Çera et al., 2022).

Financial and technological constraints further limit large-scale adoption, making gamification more viable in firms that have already invested in digital transformation efforts. For gamification to move beyond an experimental engagement tool to a structured workforce management strategy, it must be integrated into broader business objectives, adapted to cultural values, and driven by committed leadership (Hallifax et al., 2023; Leite et al., 2023). South African firms must ensure that gamification supports, rather than disrupts, workplace norms to maximise adoption across all workforce segments (Hallifax et al., 2023; Leite et al., 2023).

6.5 Research Question 4 – How Does Gamification Contribute to Competitive Advantage in the Manufacturing Sector?

The findings indicate that manufacturing leaders perceive gamification as a tool that can enhance competitive advantage, particularly by improving workforce productivity, fostering innovation, talent management and strengthening knowledge-sharing. All participants acknowledged that gamification has the potential to drive measurable business benefits when integrated strategically.

The RBV suggests that firms achieve competitive advantage by leveraging VRIN resources and fostering engagement, motivation, and knowledge-sharing, ultimately strengthening workforce capabilities (Baia et al., 2020; Keepers et al., 2022). The participants' perspectives align with this, as many leaders saw gamification as a way to optimise human capital by fostering engagement, motivation, and skills

development. SDT further reinforces this, with leaders noting that gamification's ability to enhance autonomy, competence, and relatedness could improve workforce motivation and enable performance improvements (Deci & Ryan, 2000; Nacke & Deterding, 2017; Hallifax et al., 2023; Seo et al., 2021).

The study's findings suggest that gamification's contribution to competitive advantage is realised through three main mechanisms: workforce productivity, innovation, and knowledge-sharing. This aligns with existing research, which highlights gamification's role in driving operational efficiency and fostering a culture of continuous learning and performance improvement (Patrício et al., 2018; Schmidt et al., 2023).

6.5.1 Workforce Productivity and Performance Enhancement

A common theme among participants was that gamification can enhance workforce efficiency by reinforcing target setting, performance tracking, and engagement. Leaders observed that when gamification elements, such as progress dashboards and incentive systems, were integrated into daily operations, employees showed greater motivation to meet production targets. This is consistent with Hallifax et al. (2023) and Schmidt et al. (2023), who found that gamification strengthens a results-driven culture by providing real-time feedback and structured incentives. Leaders further noted that gamification promoted collaboration, reducing inefficiencies and improving operational outcomes. This supports research indicating that gamification is most effective when it blends competitive and cooperative elements (Schmidt et al., 2023).

However, some leaders noted that this motivation was often short-lived when rewards were predictable or failed to evolve. This aligns with Chou (2019), Dah et al. (2024) and Schöbel et al. (2020), who found that gamification systems relying heavily on extrinsic motivators can create temporary motivation surges but struggle to maintain long-term engagement. To sustain performance improvements, leaders supported Dah et al.'s (2024) call to design gamification strategies that prioritise intrinsic motivation by fostering skill mastery, meaningful recognition, and a sense of purpose.

Several participants also described team-based gamification initiatives as drivers of collaboration, rather than individual competition. This reflects broader research suggesting that gamification improves team dynamics when designed to reinforce cooperative rather than purely competitive behaviours (Schöbel et al., 2020; Seo et

al., 2021; Warmelink et al., 2020). However, some leaders cautioned that poorly designed gamification could lead to disengagement rather than motivation, particularly if it overemphasised competition, had unclear rules, or caused favouritism., a concern echoed by Schmidt et al. (2023) and Warmelink et al. (2020), who found that gamification can be counterproductive if it fosters negative workplace competition.

6.5.2 Innovation and Continuous Improvement

Leaders in firms that embedded gamification into continuous improvement strategies reported that it encouraged problem-solving and operational efficiency initiatives. Participants observed that gamified challenges incentivised employees to propose process optimisations, identify cost-saving measures, and actively engage with lean manufacturing efforts. These findings align with Patrício et al. (2018) and Schmidt et al. (2023), who found that gamification fosters a culture of experimentation by engaging employees in structured problem-solving frameworks.

However, some leaders cautioned that gamification alone does not drive innovation, it must be supported by leadership commitment and an organisational culture that values experimentation. This reinforces findings by Hallifax et al. (2023), who argue that gamification's role in innovation depends on an open and collaborative leadership approach.

6.5.3 Talent Management

Some participants acknowledged gamification's role in retaining and developing internal talent. Leaders noted that gamified career progression models, skill-based challenges, and recognition systems played a crucial role in motivating employees to upskill and take on leadership roles. This aligns with Patrício et al. (2020), who found that gamification fosters a culture of self-improvement and professional development.

Several leaders also linked gamification to talent attraction, particularly among younger employees. Participants observed that younger generations entering the workforce were more receptive to gamified engagement models, while older employees were often more sceptical. This generational divide is consistent with Koivisto and Malik (2021) and González-González et al. (2022), who found that workforce engagement with gamification varies across age groups.

Leaders noted that gamified development programs reduced the need for external hiring by creating a structured progression system for internal employees. This

supports research suggesting that gamification can be leveraged as a strategic workforce planning tool (Keepers et al., 2022; Ulmer et al., 2020)

6.5.4 Knowledge-Sharing and Employee Development

Several participants highlighted that gamification strengthens knowledge retention and skills development, particularly when used in training and competency-building programs. Leaders noted that gamified learning modules improved engagement with technical training, reducing knowledge gaps and improving workforce adaptability. This is consistent with Seo et al. (2021) and Ulmer et al. (2020), who found that gamification enhances information retention and participation in knowledge-sharing platforms.

However, generational differences influenced gamification's effectiveness. Leaders noted that younger employees were more engaged with digital training platforms, while older employees preferred structured, instructor-led learning methods. This aligns with Koivisto and Malik (2021) and González-González et al. (2022), who found that gamification's success depends on its adaptation to different workforce demographics.

6.5.4 Answering Research Question 4

All participants agreed that gamification can contribute to competitive advantage in the South African manufacturing sector, but its role in sustaining long-term competitive positioning depends on how it is integrated into the broader organisational strategy.

Leaders shares that firms that integrated gamification into structured performance management frameworks saw stronger long-term engagement and productivity gains, whereas those that implemented gamification in isolated initiatives reported limited long-term benefits. Additionally, participants highlighted generational differences in gamification adoption, reinforcing the need for well-designed engagement strategies to meet the needs of the employees (Koivisto & Malik, 2021; González-González et al., 2022).

For gamification to be a sustainable competitive differentiator, it must be embedded within digital transformation, workforce development, and innovation strategies. While gamification alone does not create competitive advantage, when integrated into a broader engagement and development framework, it becomes a key driver of long-term business success (Keepers et al., 2022; Patrício et al., 2021).

6.6 Conclusion

This chapter has provided an in-depth analysis of senior manufacturing leaders' perceptions of gamification, highlighting its current applications, strategic value, barriers, and role in competitive advantage. The findings confirm that gamification is recognised as a potential enabler of employee engagement, productivity, and innovation, yet its adoption remains inconsistent due to leadership scepticism, cultural resistance, and resource constraints.

Leadership commitment emerged as a defining factor in gamification's success. Firms where leaders actively champion gamification saw stronger workforce engagement and greater alignment with business strategy, whereas those where leadership was passive or resistant experienced fragmented and short-lived adoption (Schmidt et al., 2023; Hallifax et al., 2023). Moreover, generational differences influenced adoption patterns, with younger employees more receptive to gamified approaches, while older employees expressed greater scepticism, reinforcing the need for customised implementation strategies (Koivisto & Malik, 2021; González-González et al., 2022).

The study also found that gamification's contribution to competitive advantage depends on its strategic alignment with broader business objectives. Firms that integrated gamification into workforce development, continuous improvement, and innovation initiatives saw tangible benefits, whereas those that treated it as an optional or experimental tool struggled to sustain engagement and impact (Patrício et al., 2021; Keepers et al., 2022). Talent retention and attraction emerged as a key factor, with gamification proving effective in engaging younger employees, fostering internal career progression, and reducing reliance on external hiring (Ulmer et al., 2020; Seo et al., 2021).

However, despite these opportunities, the study reinforced concerns around measurement, scalability, and cultural readiness (Schöbel et al., 2020; Hamari et al., 2020; Gupta et al., 2021). Leaders cited difficulties in assessing long-term impacts, aligning with global research that calls for more structured performance evaluation frameworks for gamification (Schöbel et al., 2020; Hamari et al., 2020). Moreover, South African firms face unique contextual challenges, including legacy infrastructure, hierarchical leadership models, and divided attitudes toward digital transformation, which shape the success of gamification initiatives (Guenther & Weingart, 2017; Abubakre et al., 2021).

Chapter 7: Conclusions and Recommendations

7.1 Introduction

This chapter synthesises the study's key findings, positioning them within the broader discussions on gamification in manufacturing, and focusing on the broader significance of the findings for business management and academia. Given that the unit of analysis was leadership perceptions, the conclusions presented reflect how senior manufacturing leaders understand, interpret, and evaluate gamification, rather than making direct claims about the overall impact of gamification on organisations.

The findings suggest that while leaders perceive gamification as having strategic potential, its adoption remains fragmented, often failing to move beyond isolated pilot projects. The challenge is not whether gamification can work, as research has already demonstrated its potential benefits for engagement, productivity, and knowledge retention (Hamari et al., 2020; Schmidt et al., 2023; Keepers et al., 2022). Instead, the challenge lies in making gamification work in the South African manufacturing context, where leadership buy-in, cultural readiness, and digital transformation constraints shape its adoption, as per leadership perceptions.

This chapter explores what these findings mean for business leaders seeking to leverage gamification, academics exploring its theoretical and practical applications, and the broader impact on workforce development. The chapter also discusses recommendations for future research and reflects on the study's limitations.

7.2 The Current State of Gamification in South African Manufacturing

The findings confirm that gamification in South African manufacturing remains in its infancy. Unlike global case studies where gamification has been integrated into digital transformation strategies (Hamari et al., 2020; Hallifax et al., 2023), South African manufacturers continue to treat it as an engagement experiment rather than a structured tool.

One of the most telling aspects of this study is the disconnection between the gamification literature and its real-world adoption amongst surveyed management executives. As early as 2011, Deterding et al. had begun shaping the academic discourse on gamification, yet in 2024, South African manufacturers are still grappling with its meaning, strategic value, and implementation challenges. Seaborn & Fels (2015) identified a lack of a clear, standardised definition as a key barrier to adoption—and nearly a decade later, the same issue appears to persist in South African industry.

Organisations are using gamified elements such as leaderboards, productivity dashboards, and digital rewards, yet few recognise these as part of a gamification strategy. Leaders struggle to articulate the business case for gamification, resulting in hesitancy, partial adoption, and eventual disengagement. Without a strategic shift at the leadership level, gamification will remain an underutilised concept rather than a transformative workforce tool.

7.3 Implications for Business and Industry

7.3.1 Leadership as the Catalyst for Gamification Success

The findings highlight that if gamification is to move beyond isolated experiments and into structured business strategy, it requires active leadership commitment. This study found that gamification only flourished where senior leaders championed it, not just by approving its use, but by embedding it into business processes and visibly supporting its implementation and continued use. Conversely, where leadership is disengaged, gamification initiatives remain fragmented or superficial, often leading to their eventual discontinuation.

This aligns with previous research on digital workplace transformations, which highlights that leadership commitment is the primary determinant of success in technology-driven engagement strategies (Gerdenitsch et al., 2020; Warmelink et al., 2020). Without structured leadership support, even the most well-designed gamification initiatives struggle to gain organisational traction (Werbach & Hunter, 2020; Hamari et al., 2020).

For gamification to move beyond experimentation and into strategic business application, leaders need to take proactive steps to institutionalise it as a core workforce engagement and performance management tool. This can be achieved in several ways.

First, South African manufacturing leaders lack exposure to gamification as a structured business tool. Training programmes that integrate gamification principles into executive education and leadership development initiatives can help overcome this knowledge gap (Gerdenitsch et al., 2020).

Second, one of the reasons gamification initiatives fail is their isolation from broader organisational performance frameworks. Research suggests that linking gamification to measurable KPIs in productivity, engagement, and retention leads to higher adoption rates (Jacob et al., 2022; Leite et al., 2023).

Third, many firms implement gamification without fully aligning it to strategic objectives, which limits its long-term value (Schmidt et al., 2023; Riar et al., 2022). By embedding gamification into core business activities such as training programmes, quality control, and continuous improvement initiatives, firms can enhance its credibility and sustainability.

Fourth, the findings indicate that leadership engagement is not only about approval but about actively embedding gamification into workplace structures. As other studies have demonstrated, leaders who promote digital innovation and gamification as part of organisational culture create environments where these tools thrive (Patrício et al., 2022).

7.3.2 Addressing Cultural and Generational Resistance

Gamification's effectiveness is highly dependent on cultural alignment. Many South African workplaces operate within traditional, hierarchical management structures, where workplace engagement strategies have historically been top-down rather than participatory (Guenther & Weingart, 2017). This creates a challenge for the adoption of gamification, which often relies on transparency, open competition, and digital engagement mechanics that may conflict with workplace norms (Abubakre et al., 2021).

A further challenge is intergenerational differences in technology adoption. This study found that younger employees are far more receptive to gamification, while older employees are often disengaged or sceptical. This supports the findings of Koivisto & Malik (2021) and González-González et al. (2022). The literature suggests that generational attitudes toward gamification are shaped by familiarity with digital environments, with younger employees expecting greater interactivity and engagement in the workplace (Çera et al., 2022).

To overcome these barriers, gamification strategies should be designed to:

- **Promote collaborative engagement rather than just competition.** Many gamification models rely on individual performance metrics, which may not align with team-based work cultures (Seo et al., 2021). Organisations should design gamification systems that encourage collective problem-solving, shared rewards, and peer collaboration, making them more accessible to different generational and cultural groups.
- **Tailor gamification mechanics to different workforce segments:** Some studies have suggested that older employees respond better to goal-based,

structured engagement mechanisms, while younger employees prefer interactive, digital-based gamification experiences (Koivisto & Malik, 2021; Yang et al., 2021). By customising gamification strategies for different workforce demographics, organisations can broaden engagement without alienating certain groups.

- **Clearly communicate gamification's purpose to avoid scepticism:** Some employees resist gamification due to concerns that it may be used as a surveillance tool rather than an engagement mechanism (Schmidt et al., 2023). Ensuring transparency and framing gamification as an empowerment tool rather than a performance-monitoring tool is key to increasing adoption.

If gamification is to succeed in South African manufacturing, it must not be seen as an external, imposed system but rather as a culturally and operationally integrated engagement tool.

7.3.3 Gamification as a Competitive Advantage Strategy

Gamification has the potential to significantly enhance workforce engagement, skill retention, and operational efficiency, leading to sustained competitive advantage (Hamari et al., 2020; Schmidt et al., 2023). However, its strategic implementation must be structured, rather than ad hoc, to drive tangible business benefits.

Study participants asserted that embedding gamification into learning and development programmes generates higher levels of skills transfer and workforce retention. This aligns with Self-Determination Theory (SDT), which suggests that well-designed gamification enhances intrinsic motivation by fulfilling employees' needs for competence, autonomy, and relatedness (Ryan & Deci, 2000; Nacke & Deterding, 2017).

Additionally, participants confirmed using gamification to reinforce operational performance and continuous improvement efforts report stronger productivity outcomes. Research suggests that gamified performance tracking tools help reinforce positive behaviours by providing real-time feedback and recognition (Jacob et al., 2022; Keepers et al., 2022).

For gamification to drive sustained competitive advantage, organisations should:

- Embed gamification within workforce training and knowledge-sharing initiatives, ensuring skills retention and continuous improvement (Paravizo et al., 2018).

- Use gamification to enhance talent retention and employee engagement, particularly for younger workforce segments accustomed to digital interaction (González-González et al., 2022).
- Leverage gamification within Industry 4.0 strategies, using digital tools to improve workforce agility and adaptability (Jacob et al., 2022).

By positioning gamification as part of a broader competitive strategy, rather than as a short-term engagement tool, organisations can unlock its full potential in workforce performance and business transformation.

7.4 Implications for Academia and Future Research

7.4.1 Bridging the Gap Between Theory and Application

Despite the extensive academic literature on gamification, there is still a lack of empirical research on its application in manufacturing, particularly within the South African context (Schmidt et al., 2023; Patrício et al., 2022). This study highlights several research areas that require further academic attention:

- Examine gamification's long-term impact on engagement and productivity.
- Investigate how cultural and generational differences shape gamification adoption.
- Explore financial and operational barriers to large-scale gamification implementation.
- Industry-specific gamification frameworks that consider the unique cultural and economic challenges in South African businesses. Current models are often derived from Western case studies and may not fully reflect South African workplace dynamics (Abubakre et al., 2021).
- Comparative research on gamification implementation across different sectors, beyond manufacturing. Given that gamification is used in fields such as banking, education, and healthcare, cross-industry comparisons could yield valuable insights into best practices and challenges (Koivisto & Malik, 2021).

While this study focused on leadership perceptions, future research should extend beyond senior management to include employee perspectives, quantitative impact assessments, and cross-industry comparisons. By expanding research beyond theoretical models into real-world, contextualised studies, academia can provide

practical guidance on how gamification can be better applied in South African manufacturing.

7.4.2 Future Research Directions

This study highlights several avenues for further exploration. Future research should:

- Use mixed-methods or quantitative approaches to provide quantitative validation of gamification's effectiveness.
- Conduct sector-wide case studies to identify best practices for gamification adoption in South African industry.
- Further research to develop a South African specific or Manufacturing specific Gamification Maturity Model, given that existing models may not fully capture local business challenges.

7.5 Summary of Key Findings (Graphical Framework)

To visualise this study's insights, Figure 5 presents a summary framework illustrating how leadership, cultural factors, and strategic integration influence gamification adoption in South African manufacturing.

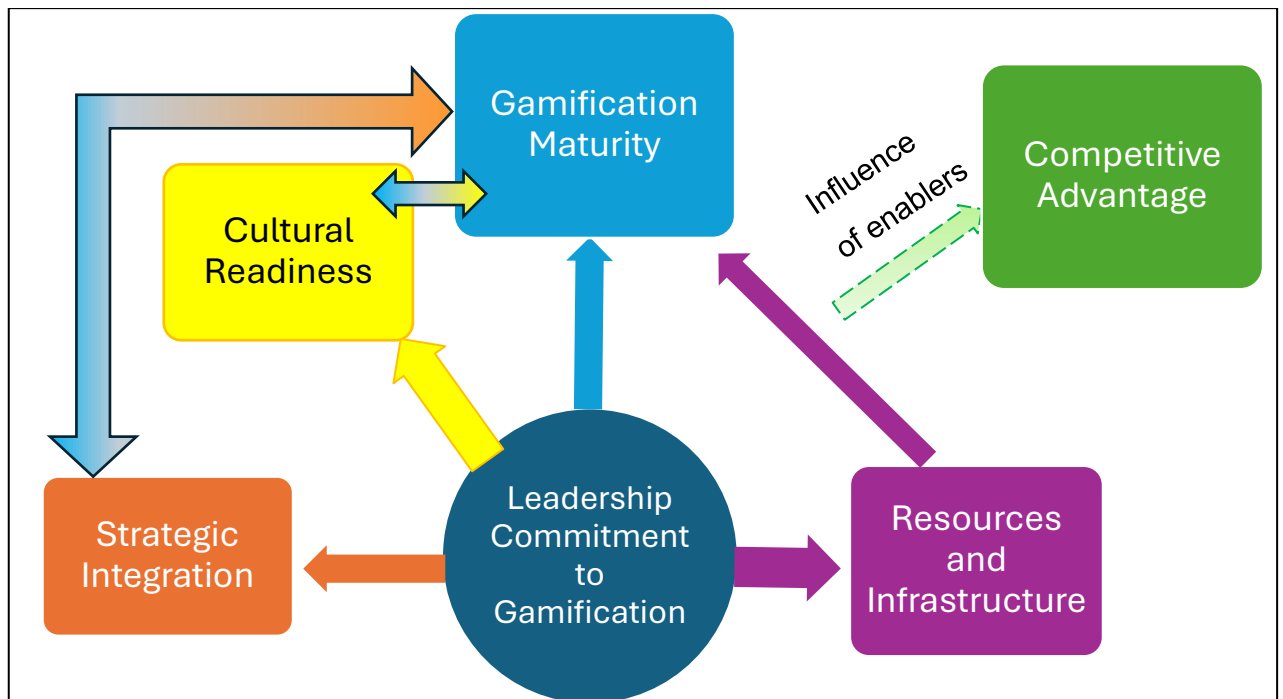


Figure 5 : Summary of Key Findings Graphical Framework

7.5.1 Key Enabler: Leadership Commitment

The study confirms that leadership commitment is a key enabler of gamification adoption, as it was highlighted by all participants. Leaders play a crucial role in

determining whether gamification moves beyond isolated experiments to become a structured engagement tool. However, leadership alone does not guarantee success, gamification's effectiveness depends on multiple interconnected factors, including cultural alignment, technological readiness, and strategic integration.

7.5.2 Four Enablers of Gamification Adoption

1. **Strategic Integration** : Gamification is more successful when linked to business processes, performance objectives, and continuous improvement initiatives (Schmidt et al., 2023; Jacob et al., 2022). Without integration, gamification risks being viewed as a temporary engagement tool rather than a structured business strategy.
2. **Cultural Readiness** : Organisational culture plays a key role in workforce engagement with gamification. Hierarchical work environments may resist participatory gamification models, while more open work cultures are likely to see stronger adoption (Guenther & Weingart, 2017; Abubakre et al., 2021; Chetty & Price, 2024; Riar et al., 2022). Generational differences influence engagement, younger employees are more receptive, while older employees tend to be more sceptical (Çera et al., 2022; Koivisto & Malik, 2021; González-González et al., 2022).
3. **Gamification Maturity** : Firms are at different stages of gamification adoption, from early experimentation to structured implementation. Those that integrate gamification into performance tracking and training see higher engagement than those treating it as an isolated initiative (Schmidt et al., 2023; Leite et al., 2023).
4. **Resources and Infrastructure** : Limited digital infrastructure and financial investment hinder gamification's scalability (Leite et al., 2023; Hamari et al., 2020). Without adequate software, tracking mechanisms, and leadership support, gamification remains underutilised.

7.5.3 Outcome: Gamification's Contribution to Competitive Advantage

Gamification has the potential to contribute to workforce engagement, skill development, and operational efficiency, which can enhance competitive advantage. However, gamification is not a guarantee of success, the influence of gamification depends on how well leadership aligns it with strategic business objectives. Firms that integrate gamification effectively are more likely to see long-term benefits, but without proper implementation, its effects may be short-lived or superficial. Chou's (2019) Octalysis Framework suggests that a balanced approach in addition to

traditional game elements leads to greater long-term impact. As South African manufacturing evolves, firms that leverage such inclusive gamification strategies may see stronger competitive advantages.

7.6 Limitations

While this research provides valuable insights, it is important to acknowledge its limitations:

- **Qualitative Scope:** This study used qualitative interviews with senior manufacturing leaders, meaning findings are based on perceptions rather than quantitative performance data. While qualitative methods provide rich insights into leadership perspectives, they do not measure direct outcomes such as productivity increases, error reduction, or financial returns. Future research should incorporate quantitative metrics to validate how gamification impacts workforce efficiency over time and quantify the effect of the barriers and enablers to gamification's success.
- **Sampling Limitations:** The study focused on a limited sample of manufacturers, meaning findings may not reflect the entire South African manufacturing sector. Firms that have not experimented with gamification may have different perspectives that were not captured. Additionally, small and medium-sized enterprises (SMEs), which may face different financial and technological constraints, were underrepresented. Future research should expand the sample size to include a more diverse range of companies.
- **Lack of Direct Employee Perspectives:** The study focused exclusively on leadership perspectives, omitting employee views on gamification adoption. This introduces potential bias, as leaders may overestimate employee engagement or misinterpret resistance. Future research should incorporate employee surveys, experimentation or case studies to understand how gamification is perceived at all levels.
- **Unit of analysis:** Leadership perceptions provided valuable insights into strategic decision-making. However, future research could expand the scope by analysing manufacturing organisations, incorporating firm structures, policies, and employee experiences to gain a more comprehensive understanding of gamification adoption and its impact.

This study provides a platform for future research, which could address these limitations by employing quantitative methods, broader sampling, and multi-level organisational analysis.

7.7 Conclusion

In exploring how gamification is perceived, adopted and leveraged by the South African manufacturing sector and its role in enhancing competitive advantage, this study has demonstrated that while leaders recognise gamification's potential, its implementation remains fragmented. Leaders generally perceive gamification as a tool for enhancing engagement, training, and performance tracking, yet few see it as fully embedded in strategic initiatives. Many describe its current use as experimental, with applications limited to isolated projects rather than structured organisational frameworks. Perceptions of gamification's effectiveness vary, with some leaders acknowledging its motivational benefits while others remain sceptical about its long-term impact. Challenges such as leadership hesitancy, cultural resistance, and technological limitations were consistently raised as barriers to broader adoption.

Overall, while leaders see value in gamification, their perceptions suggest that its impact remains largely unrealised due to concerns over sustainability, employee engagement, and alignment with strategic objectives. Some leaders view gamification as a useful but non-essential tool, while others believe it could contribute more meaningfully if integrated into workforce development and operational strategies. However, most leaders agree that without structured implementation, gamification risks being perceived as a short-term initiative rather than a sustained competitive enabler. Moving beyond experimentation requires clearer alignment with business goals, stronger leadership advocacy, and the development of tailored engagement strategies that resonate across different workforce demographics.

For academia, this research highlights a gap in empirical studies on gamification in South African industry. Future research should explore how leadership perceptions influence gamification's success, incorporating broader perspectives, including employee experiences, to provide a more comprehensive understanding of adoption dynamics. For business leaders, it is a call to action to recognise gamification not as a gimmick, but as a legitimate tool for workforce engagement and competitive advantage. Whether gamification can contribute to competitive advantage depends on how leaders choose to implement, support, and sustain it within their organisations.

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Appendices

Appendix 1 – Consistency Matrix

Research Questions	Literature Review	Data Collection Tool	Analysis
Research Question 1: How is gamification currently being used within South African manufacturing firms?	Deterding et al., 2011; Huotari & Hamari, 2017; Keepers et al., 2022	Interview Guide: Questions 1-2 (exploring current usage and organisational level application)	Thematic Analysis to identify patterns of gamification usage across different companies
Research Question 2: What are the current perceptions of gamification among South African manufacturers?	Werbach & Hunter, 2020; Robson et al., 2015; Keepers et al., 2022; Deterding et al., 2011; Ryan & Deci, 2000 (Self-Determination Theory); Nacke & Deterding, 2017	Interview Guide: Questions 3-5 (focusing on perceived benefits and challenges)	Thematic and Content Analysis to categorize perceptions, also categorize and quantify benefits and challenges
Research Question 3: What are the barriers to and enablers of effective gamification implementation in South African manufacturing?	Hamari et al., 2014; Patrício et al., 2018; Patrício et al., 2021	Interview Guide: Questions 6 (identifying enablers and barriers to implementation)	Thematic and Content Analysis to extract key enablers and barriers as perceived by senior management
Research Question 4: How does gamification contribute to	Porter, 2008 (Competitive Advantage); Zichermann &	Interview Guide: Questions 7 (exploring the	Comparative Analysis to evaluate the contribution of

competitive advantage in the manufacturing sector?	Cunningham, 2011; Keepers et al., 2022;	strategic value of gamification)	gamification to competitive advantage
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Appendix 2 : Draft Interview Guide

Introduction

- Introduce myself and the purpose of the study.
- Ensure confidentiality and obtain informed consent.
- Briefly explain that gamification involves integrating game-like elements (such as points, badges, and leaderboards) into non-game contexts to engage and motivate employees, improve performance, and achieve organisational goals.

Gamification Elements and Usage

1. How would you describe gamification? (do not explain gamification until after respondents have answered this question)
2. **Usage:**
 - How have you used gamification before (e.g., points, badges, leaderboards) –(probe for within company and/or within supply chain – upstream, downstream?)
 - Are you currently using gamification in any of your areas of responsibility? If yes, what elements are you using, and why?
 - Are you thinking about using gamification in your areas of responsibility in future? If yes, which elements, and why?
3. **Benefits:**
 - What benefits have you observed from using gamification (workplace and across the supply chain)?
 - What benefits do you anticipate receiving from using gamification in future (workplace and across the supply chain)?
4. **Challenges:**
 - What challenges have you encountered when implementing gamification (workplace and across the supply chain)?
 - What challenges do you expect to encounter when implementing gamification in future (workplace and across the supply chain)?
5. **Perceptions:**

- What are your views on gamification's effectiveness in enhancing employee motivation and engagement at different levels (e.g., operational, managerial)?
- What are your views on gamification's effectiveness in enhancing organisational performance?
- What are your views on gamification's effectiveness in enhancing supply chain performance?
- What factors most facilitate the adoption of gamification within organisations?
- What factors most facilitate the adoption of gamification across supply chains?

6. Strategic Value:

- How do you think gamification contributes to manufacturing competitive advantage at an organisational level
- How do you think gamification contributes to manufacturing competitive advantage at a supply chain level?

Closing

- Thank them for their time and insights.
- Reiterate confidentiality of the responses.
- Inform them about the next steps and how they can receive a summary of the findings.

Appendix 3 : Template of the initial introduction email

Note : Some details have been changed to remove identity of researcher and supervisor as per submission requirement.

Dear [Recipient's Name],

I hope this message finds you well. My name is *[Researcher Name]*, and I am currently pursuing my MBA at the Gordon Institute of Business Science (GIBS). As part of my academic research, I am conducting a study focused on exploring the use of gamification, or its absence, within the South African manufacturing sector. Specifically, I aim to examine how gamification can drive employee engagement, innovation, and ultimately, competitive advantage for manufacturing organisations.

My research is supervised by *[Supervisor Name]*, a leading authority in the South African manufacturing sector. *[Supervisor Name]* has an extensive background in *[Supervisor further details and background]*, and we believe the findings will provide new perspectives on the evolving role of innovation and technology in manufacturing.

I would be honoured if you would consider participating in an interview to share your valuable insights and experience in this area. Your contribution would not only enhance the study but also offer fresh perspectives to industry leaders like yourself on how to effectively leverage gamification strategies to drive innovation and maintain a competitive edge.

The interview would take approximately 45–60 minutes at a time most convenient for you. Please let me know your availability, and I will gladly accommodate it.

Your participation will remain confidential, and all data shared will be anonymized in the final report. Once the study is completed, I will also make the findings available to you, offering useful insights into current industry trends and practices, which may be of value to your organisation.

Thank you for considering this request. I look forward to your positive response and to the opportunity to discuss this important topic with you.

[Researcher and Supervisor Details at the end]

Appendix 4 : Codebook summary to categories

Code Group / Category	Codes	Code	Comment
Understanding Gamification	34	<p>Always been there</p> <p>Application contexts for gamification</p> <p>Cloaking something serious as a fun game</p> <p>Company size and context</p> <p>Defining gamification</p> <p>Diverse industry contexts for gamification</p> <p>Game is good for a once off but difficult to maintain</p> <p>Gamification is about people not technology</p> <p>Gamification is about short interval control</p> <p>Gamification is not good for long term</p> <p>Gamified across the business</p> <p>Gamified productivity metrics</p> <p>Gamified safety metrics</p> <p>Gamified training or learning experience</p> <p>Gamifying subjective elements is difficult</p> <p>Internal focus only</p> <p>Lack of awareness of gamification</p> <p>Likening gamification to other established</p>	<p>encompasses various insights into the concept of gamification, the participants definitions, awareness, its applications, and its limitations in different contexts, especially within South African manufacturing, the business context and the thoughts around the gamification term or concept. [P] [SEP]</p>

		<p>concepts</p> <p>Manufacturing context</p> <p>Not familiar with gamification concept</p> <p>Operating with resource constraints</p> <p>Operational gamification</p> <p>Other business focus or priorities</p> <p>Outcomes of gamifying</p> <p>Outdated technology being used</p> <p>People are not aware it is a game</p> <p>Platform driven application</p> <p>Playing field not level</p> <p>Realisation that gamification is already implemented</p> <p>Short term focus</p> <p>South Africa vs Rest of the world competition</p> <p>South African challenges</p> <p>Unclear how gamification applies to manufacturing</p> <p>Unrealised potential of gamification</p>	
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Perspectives and Generational Views	14	<p>Age profile of employees / age of company</p> <p>Considered using gamification but did not action</p> <p>Current vs past views on gamification</p> <p>Generational readiness</p> <p>Implementation only when people are ready</p> <p>Importance of targets</p> <p>Important to understand the rules and impact</p> <p>Internal competitiveness</p> <p>Older generation holding onto information for job security</p> <p>Older vs new generation</p> <p>Still stuck in the old ways of doing things</p> <p>Younger generation more ready for gamification</p> <p>Younger generation need gamification</p> <p>Younger generation want instant gratification</p>	<p>Explores the participant perspectives on gamification as well as how different age groups and generational cohorts perceive and are ready for gamification, focusing on attitudes, readiness, and preferences related to technology and work culture.</p>
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<p>Existing Applications in South African Manufacturing</p>	<p>26</p>	<p>Current gamification expectations not met Current rewards are linked to Teams Current tier driven game design Currently incentive driven Currently key result or objective driven Currently strategically aligned Currently using data visualisation Customer feedback and performance metrics Customer gamification Different incentive structures in manufacturing Gamification used for team building activities Gamified across the business Gamified experiments Individual incentive drivers Internal Business Awards Lean enables gamification Lean Integration Manual vs Electronic Gamification Metrics as supply chain criteria</p>	<p>these codes address the current state of gamification in South African manufacturing, including its existing use, challenges faced, and strategic alignment with business goals.</p>
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		<p>Recognition or badges as incentives</p> <p>Supply chain gamification</p> <p>Targeted to shopfloor only</p> <p>Use of leaderboards or ranking system</p> <p>Used in strategy development</p> <p>Uses of gamification</p> <p>Using a gamification platform</p>	
<p>Leadership Factors</p>	<p>8</p>	<p>Intentional Leadership</p> <p>Leadership ensuring ability</p> <p>Leadership permission to play</p> <p>Leadership resistance</p> <p>Leadership support is key enabler</p> <p>Leadership support to enable to performance</p> <p>Leadership understanding the benefit</p> <p>Providing employees the means</p>	<p>Highlights the critical role of leadership in supporting, resisting, or enabling gamification efforts, focusing on leadership's understanding and influence on gamification outcomes.^[P]_[SEP]</p>

Emerging and Proposed Uses	6	Future gamification of support services Future of gamification Gamification for collaborative partnerships Macro-level gamification Office based gamification Proposed use of gamification	Participants views on the future potential of gamification, including its expansion into other business areas and its evolving role in organisational strategy ^{[P]_{SEP}}
Implementation Challenges	14	Challenges in measurement Challenges on information sharing Change management challenges Focus on tools over integration Individual vs Team gamification Large Corporate challenges Perception challenges Risk of gamification being only competition Stopped due to lack of monitoring and leadership support Strategic losses for localisation Supervisory challenges Supplier power and global sourcing limitation Supply chain challenge	These codes address the practical difficulties and obstacles faced when implementing gamification, including measurement issues, cultural resistance, and strategic challenges ^{[P]_{SEP}}

		<p>: Focus on number rather than how to improve</p> <p>Technology engagement challenges</p>	
<p>Cultural and Organisational Resistance</p>	<p>8</p>	<p>Change management challenges</p> <p>Culture is a challenge</p> <p>Drives hard behaviour</p> <p>Employees nervous to play</p> <p>Leadership resistance</p> <p>Supply chain not ready</p> <p>System complexity and Gamification</p> <p>Too immature to implement gamification</p>	<p>Identifies barriers to gamification adoption within company culture and organisational structures, emphasizing resistance to change and complexity.</p>
<p>Equity and Fairness in Gamification</p>	<p>5</p>	<p>Equity challenges in gamification</p> <p>Fairness is important</p> <p>Gamification only good for certain jobs or levels</p> <p>Only one winner, or known winner limits motivation</p> <p>Team measured but individual incentive</p>	<p>Focuses on the fairness and equity concerns related to gamification, including challenges associated with motivation, competition, and recognition.</p>

Incentive Challenges	Related	8 Business does not believe in/limits rewards Competitiveness risks Employees want financial reward not recognition Financial incentives are key Incentive challenges Incentives are missing or not clear Remuneration incentives may drive the wrong behaviour Rewarding a few will demotivate many	Explores challenges related to incentives, both in terms of how rewards are structured and the impact of financial versus non-financial motivation.
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Positive Effects / Key Benefits	30	Benefit : Access to real time data Benefit : External Reputation and engagement Benefit : Greater Work Satisfaction Benefit : Improved Morale Benefits : Increased Loyalty Breaks down silos Bringing elements of fun to the workplace Can be used to shift culture Enables quick adjustment to strategy Enables transparency Enhances external relationships Gamification enables growth Gamification enables strategic alignment Gamification for collaborative partnerships Gamification helps with costs you can control Helps give focus to what is important Immediate benefit to performance Improves absorption of knowledge Improves individual	Outlines the potential positive outcomes of gamification, such as improved performance, morale, engagement, and organisational alignment.
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		<p>performance Improves organisational performance Improves participation / interaction Improves productivity Improves work environment and culture Positive contribution to innovation positive contribution to Manufacturing as a whole Positive contribution to talent development/growth Quicker access to data Quicker engagement possibilities Quicker or better decision making Transform dull and repetitive tasks into engaging activities</p>	
<p>Negative Effects and Risks</p>	<p>10</p>	<p>Drives hard behaviour Driving the wrong behaviour Dual nature of gamification Employees nervous to play Game is good for a once off but difficult to maintain Gamification causes</p>	<p>Focuses on the risks and potential negative consequences of gamification, including unhealthy competition and challenges in maintaining engagement.</p>

		<p>chasing of numbers Gamification is not good for long term Gamification link to cynefin matrix Gamification risk Unhealthy competition</p>	
<p>Key Implementation Considerations</p>	<p>20</p>	<p>Access to market enables individual based gamification Agility in medium sized businesses Clearly defined rules around game Ensure the investment is done wisely Gamification is about short interval control Healthy competition How do we define winners Must not be seen as something extra Need to keep it fresh Outward gamification causes a loss in focus on the business People are the differentiator for competitive advantage Recommendations / Ideal setup Requirements for digital project success Requirements to apply gamification</p>	<p>These codes identify essential factors to consider for successful gamification implementation, including the need for clear rules, ongoing engagement, and cultural alignment.</p>

		<p>Requires a shift in culture</p> <p>Safety around Gamification is important</p> <p>Skills shortage or gap</p> <p>Start with pilots</p> <p>Stigma of playing games</p> <p>The incentive drives the type of behaviour</p>	
External Factors	5	<p>Benchmarking against global standards</p> <p>Customer feedback and performance metrics</p> <p>Established long term relationships with suppliers</p> <p>Global competition</p> <p>Market is price focused</p>	<p>The external pressures and competitive forces, such as global competition and customer feedback, that influence gamification adoption.^{[P]_{SEP}}</p>
Internal Factors	7	<p>Becoming familiar with the gamification concept is an enabler</p> <p>Budget is an enabler</p> <p>Communication as an enabler</p> <p>Enabled by the right mindset/attitude/culture</p> <p>Fast vs. slow thinking</p> <p>Operating with</p>	<p>Internal factors that are generally controllable by the business, such as organisational readiness, culture, and budget constraints, that enable or hinder gamification.^{[P]_{SEP}}</p>

		<p>resource constraints</p> <p>Visibility vs Positive Competition</p>	
Technology as an Enabler	8	<p>AI can enhance gamification</p> <p>AI levels the playing field</p> <p>Differentiation through AI</p> <p>Easier engagement with technology</p> <p>Enhanced organisational performance through technology</p> <p>Technology as a tool</p> <p>Technology is an enabler</p> <p>Technology to enable has been around for some time</p>	<p>Codes that highlight the role of technology, especially AI, in enabling and enhancing gamification efforts in manufacturing. [P] [SEP]</p>
Strategic Vision and Growth	6	<p>Can be used to shift culture</p> <p>Customer pressure</p> <p>Enables quick adjustment to strategy</p> <p>Gamification as a necessity</p> <p>Good as an attraction & retention technique</p> <p>Positive contribution to competitive advantage</p>	<p>Discusses how gamification can align with strategic goals, drive growth, and contribute to competitive advantage. [P] [SEP]</p>
Employee Benefits	0		

<p>Organisational Benefits</p>	<p>18</p>	<p>Creates participation or engagement at scale Drives motivation and engagement Empowers the employees Gamification benefit : Compliance motivation Gamification creates small achievable goals from something bigger Gamification enables growth Gamification enables strategic alignment Gamification helps with costs you can control Good as an attraction & retention technique Improves participation / interaction Long term benefit to organisational performance Makes large scale communication easier Makes strategic communication easier Playing for the organisation Positive contribution to competitive advantage Positive contribution to innovation positive contribution to Manufacturing as a whole</p>	<p>Codes that focus on how gamification contributes to organisational goals, including engagement, strategic alignment, and overall performance improvement.</p>
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		<p>Positive contribution to talent development/growth</p>	
<p>Individual Benefit</p>	<p>5</p>	<p>Creates status / prestige Creates visibility Enables individuals understand where they fit into a team Improves absorption of knowledge Improves individual performance</p>	<p>Benefits of gamification at the individual level, such as increased visibility, status, and performance improvement.</p>

