
How Gamification Mechanics Drive Gen-Z Entrepreneurial Intention in Emerging Economies

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A B S T R A C T

Despite the positive demographic profile and national innovation agenda, entrepreneurship education in emerging economies like Bangladesh still faces the challenge of entrepreneurial intention among Generation Z university students. Because traditional teaching methods fail to spark the motivation needed to build entrepreneurial intention, there is growing interest in gamification as a hands-on alternative. This study develops a framework to explain how specific gamification mechanics drive entrepreneurial intention by boosting intrinsic motivation, drawing on Self-Determination Theory and the Theory of Planned Behaviour. The research adopts a qualitative conceptual paper design, which synthesises the evidence from literature indexed in Scopus and Web of Science under five thematic sections. The critical thematic analysis results in a framework that places five mechanics as antecedents that vary in their ability to satisfy autonomy, competence, and relatedness needs. Intrinsic motivation mediates these effects, moderated by digital access and institutional support. Six formal propositions can be identified: Narrative challenges and mastery feedback are the strongest triggers of intrinsic motivation; leaderboards have curvilinear effects; badges need to align with milestones; and structural moderators are the conditions under which the scalability is realised, especially for female and rural students. The framework breaks down gamification into specific components, shows how intrinsic motivation links these components to student intentions, and applies broad theories to the unique context of Bangladesh. This study provides a mechanistic level of precision to entrepreneurship education scholarship, SDT-TPB integration for contexts in the Global South, and evidence-based design principles for scalable pedagogy. It provides a theoretical ground for the generativity of Bangladesh, and it sets empirical agendas with the promise of socioeconomic impact.

Keywords: emerging markets and developing economies, entrepreneurial intention, entrepreneurship education, gamification mechanics, intrinsic motivation.

1. Introduction

Economies built around a dominant export sector eventually reach a point where diversification becomes unavoidable (Adeel et al., 2023). Bangladesh is now approaching that

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critical moment. Entrepreneurship has long been known as one of the key drivers of economic growth, job creation and structural transformation, especially in emerging economies where there is a shortage of formal employment and the rate of youth unemployment is still at a socially unsettling level (Alam et al., 2020; Rakib et al., 2021). In this context, the study of entrepreneurial intention of students in the university has received considerable attention from both researchers and policymakers as the strongest cognitive predictor of an actual entrepreneurial action (Ajzen, 1991; Krueger et al., 2000). The context of this relationship is especially relevant in South Asia, and Bangladesh, as one of the region's fastest-growing economies, is a relevant example. Despite an army of young people with a demographic dividend, the empirical evidence shows that there is a continuous lack of entrepreneurial intention among Bangladeshi university graduates due to a lack of entrepreneurship pedagogy, institutional support, and structural barriers to starting a business (Hossain et al., 2023; Masroor et al., 2023). To do this, it is not enough to simply increase the availability of entrepreneurship education, but rather, a pedagogical paradigm shift in the design and delivery of entrepreneurship education.

As a complement to the traditional lecture-based approach, experiential, technology-enhanced pedagogy has become a growing trend in entrepreneurship education research. One of the most promising innovations among the innovations is gamification, which is the deliberate application of game design features such as points, badges, leaderboards, story-based scenarios, and feedback systems focused on mastery, in non-gaming contexts like education (Ruiz-Alba et al., 2019; Zainuddin et al., 2020). Empirical research has been conducted to support the idea that gamified learning environments have a positive effect on entrepreneurial attitudes, perceived behavioural control, and intention, since they provide the conditions that allow for learning in a low-risk, experiential environment, emulating the entrepreneurial decision-making under uncertainty (Ruiz-Alba et al., 2019; Al-Qadasi et al., 2024; Misbauddin et al., 2025). Theoretically, these effects are motivated by Self-Determination Theory (SDT), which posits that the most powerful and reliable predictor of volitional behavioural outcomes is the satisfaction of three basic psychological needs for autonomy, competence, and relatedness, which is the highest quality of motivational engagement (Ryan & Deci, 2000; Ryan & Deci, 2017). Specifically, SDT has proven to be relevant to explain this phenomenon in the context of Gen-Z learners, who have been documented to prefer a learning environment that is autonomous, digitally immersive, and challenge-oriented (Misbauddin et al., 2025).

However, there are three key and interdependent gaps in the current literature. Firstly, the prevailing research on gamification assumes it is a combination of separate and different mechanics, where they are grouped into one variable and consequently, the differential motivational effects of these mechanics are not theorised (Zainuddin et al., 2020; Misbauddin et al., 2025). Such methodological amalgamation makes it difficult to identify which of the SDT's simple psychological factors are most effective at influencing entrepreneurial intention, and thus what can be gleaned from published research for curriculum designers and educational technology developers. Second, SDT has often been used as a theoretical explanation for the motivational impacts of gamification, but it has not often been explicitly and empirically described as a mediator between gamification and entrepreneurial intention (Ruiz-Alba et al., 2019; Ryan & Deci, 2017). The mediating mechanism is thus not theoretically validated, but only theoretically asserted. Thirdly, the empirical evidence regarding gamification and entrepreneurial intention studies is heavily skewed towards Western European, North American and high-income East Asian contexts, and there is a lack of empirical research to determine the applicability of gamification in socio-culturally different

and resource-limited environments like Bangladesh (Hossain et al., 2023; Masroor et al., 2023).

These gaps converge into a well-defined research issue: lack of a theoretically integrated and context-sensitive conceptual framework that can systematically understand the pathway linking specific gamification mechanics and entrepreneurial intention via the psychological pathway of intrinsic motivation among Bangladeshi university students of Generation Z. This lack of framework limits theoretical developments in entrepreneurship education scholarship and practical decision-making by entrepreneurship education teachers, policymakers and entrepreneurship education technology developers who want to develop entrepreneurial capacity in the booming higher education sector in Bangladesh in an evidence-based and scalable way. This is a significant gap, especially in the light of Bangladesh's institutional commitment to youth entrepreneurship development via national initiatives like Startup Bangladesh and the iDEA Project, where there is a dearth of pedagogical evidence to support the strategy (Alam et al., 2024; Misbauddin et al., 2025).

The ultimate goal of this study is to create and theoretically validate a holistic conceptual framework of the relationship between gamification mechanics and entrepreneurial intention mediated by intrinsic motivation based on Self-Determination Theory and Theory of Planned Behaviour in the context of higher education in Bangladesh for the Generation Z students. The study has five specific objectives that it pursues to achieve this aim. First, to differentiate the basic psychological need-satisfaction profiles of five discrete gamification mechanics theoretically within an SDT-based model. Second, to develop formally stated propositions positioning intrinsic motivation as the central mediating mechanism between gamification mechanic exposure and entrepreneurial intention. Third, to theorise the moderating roles of perceived digital access and institutional entrepreneurship support within the Bangladeshi context. Fourth, to draw out gamification design principles for the development of entrepreneurship curriculum in Bangladesh and other emerging economies. Fifth, to assess the theoretical transferability of the integrated SDT-TPB framework beyond its mainly empirical roots in Western countries.

This research has several substantive and original contributions to the international academic literature. In theory, it is a step towards a more mechanistically accurate and disaggregated theory of gamification's motivational impact by pairing individual gamification mechanics with their respective SDT need-satisfaction profiles and thus, addressing the theoretical aggregation issues that have limited previous research (Ruiz-Alba et al., 2019; Alam et al., 2020). With respect to the method, the formal inclusion of SDT and TPB in a single propositional framework, and the inclusion of an additional construct of intrinsic motivation between gamification input and intentional output, expands the scope of explanation of these two theories on entrepreneurship education in the context of an emerging economy. From a theoretical perspective, the study fills a clear gap in the literature on gamification and entrepreneurial intentions: the geographical scope of the studies has been limited, and the evidence produced is context-specific and can be replicated and transferred to other South and Southeast Asian higher education contexts. In terms of practice, the framework offers evidence-based design principles for gamified entrepreneurship pedagogies, directly relevant to the national innovation infrastructure in Bangladesh, which will help the theory-to-practice interface that is now gaining increased attention by leading entrepreneurship education journals (Masroor et al., 2023).

2. Review of Relevant Literature

2.1. Purpose of the Literature Review

The literature review has three interrelated functions regarding this study. First, it provides the theoretical structure supporting the conceptual framework and explains the logic of the study's two theoretical bases, namely Self-Determination Theory and Theory of Planned Behaviour. Second, it is a critical synthesis of the existing empirical evidence on gamification mechanics, intrinsic motivation, and entrepreneurial intention in order to show what is known and what is not known yet. Finally, it situates the research in the Bangladesh HE and entrepreneurship context and provides secondary evidence to support the geographical and demographic context of the study, being Generation Z university students. The review is not chronological, but thematic, with emphasis on analysis and synthesis over mere description and enumeration and is organised to conclude with a well-stated gap that directly leads to the proposed conceptual framework and six formal propositions.

2.2. Theme 1: Entrepreneurial Intention: Theoretical Foundations and Measurement

2.2.1. Key concepts and definitions

In general, entrepreneurial intention refers to an individual's conscious cognitive state that guides his or her attention, experience, and action towards the development of a new business idea or the initiation of a new venture (Bird, 1988; Krueger et al., 2000; Boubker et al., 2021). It is well differentiated from entrepreneurial attitude, which is a general evaluative disposition and entrepreneurial behaviour, which is observable venture-creation activity. The intention construct has a theoretically privileged position since it is the most immediate and reliable cognitive antecedent of entrepreneurial action and is the main dependent variable in most of the research on entrepreneurship education (Ajzen, 1991; Linan & Chen, 2009; Cassol et al., 2022).

2.2.2. Relevant theoretical models

The prevailing theoretical structure for the understanding of entrepreneurial intention is the Theory of Planned Behaviour (TPB) suggested by Ajzen (1991). The TPB is based on three attitudinal antecedents of intention: personal attitude towards the behaviour, subjective norms (perceived social pressure), and perceived behavioural control (self-efficacy and resource accessibility) (Cui & Bell, 2022). Krueger et al. (2000) entrepreneurial event model expands this model by adding perceived desirability and perceived feasibility as predictors of intention. Linan and Chen (2009) also modified the TPB to fit the context of cross-cultural entrepreneurship study, and developed an Entrepreneurial Intention Questionnaire (EIQ), which has been one of the most commonly used validated questionnaires for measuring entrepreneurial intentions.

2.2.3. Major debates and trends

One of the ongoing discussions within the entrepreneurial intention literature is the intention-to-behaviour gap: that is, do high intentions to engage in a behaviour translate to the actual behaviour of creating a venture, especially in the face of structural constraints typical of developing economies (Krueger et al., 2000; Akhter et al., 2020)? Recent Bangladesh studies consistently support that access to finance and institutional support are key limitations in the intention to adopt among university students, while attitudinal and subjective norm components are relatively good (Akhter et al., 2020; Hossain et al., 2023; Masroor et al., 2023). A second debate is around the notion that there are meaningful generational differences in the antecedents of intentions: Generation Z students have motivational profiles that differ from

their millennial predecessors, valuing autonomy, the digital, and purposeful work (Misbauddin et al., 2025).

2.2.4. Methodological approaches

The cross-sectional survey with covariance-based SEM or PLS-SEM is a research method that is widely used in the study of entrepreneurial intention. This approach works well for estimating relationships among TPB constructs and has been applied effectively in Bangladesh and other developing-country settings alike (Hossain et al., 2023; Adeel et al., 2023). Its main limitation is temporal. Measures of education, attitude, and intention collected at a single point in time cannot really establish whether an educational intervention actually caused later change in motivation or intention. Longitudinal research provides a more solid foundation for studying change, as Otache et al. (2021) show, by following students over time, but requires increased access, retention, and control of extraneous factors. Experimental and quasi-experimental studies can help to improve causal inference by directly comparing pedagogical conditions, but they tend to oversimplify the institutional context and typically only assess short-term intentions. Other evidence from the meta-analysis indicates that the duration of the programme and research design influence the type of educational outcomes that are actually estimated (Martínez-Gregorio et al., 2021). Future testing of this framework should thus be implemented in conjunction with surveys and longitudinal, experimental, and qualitative evidence, and not rely on any one of these methods alone.

2.3. Theme 2: Self-Determination Theory and Intrinsic Motivation in Educational Contexts

2.3.1. Key concepts and definitions

According to Self-Determination Theory (SDT) (Deci & Ryan, 2013) and a series of theories, such as Cognitive Evaluation Theory and Basic Psychological Needs Theory, human motivation is not a single continuum, but a multiple continuum which spans from amotivation to different levels of external regulation to integrated and intrinsic motivation. Intrinsic motivation, the most autonomous and self-determined type of motivational engagement, is when someone does something because it is interesting, enjoyable, or good for them (Cui et al., 2021); it is not done for a reason other than that. Importantly, SDT indicates that intrinsic motivation is a state and not a stable trait and thus can be affected by the extent to which the learning context allows the satisfaction of three basic psychological needs: autonomy (the feeling of volitional self-direction); competence (the feeling of effective interaction with the environment); and relatedness (the feeling of meaningful connection with others) (Ryan & Deci, 2017).

2.3.2. Relevant theoretical models

In addition to the need-satisfaction aspect of SDT, another aspect of SDT that is especially pertinent to gamification research is the so-called Cognitive Evaluation Theory (CET) (Ryan & Deci, 2000; Przybylski et al., 2010), which provides a theoretically precise account of when external events, including reward, feedback and challenge structures, either support or undermine intrinsic motivation. CET suggests that external events that are experienced as informational and competence-affirming are likely to increase intrinsic motivation, whereas events that are experienced as controlling are likely to decrease intrinsic motivation, which has obvious implications for designing gamification mechanics (Fan et al., 2024). SDT's Organismic Integration Theory (OIT) is another elaboration of the internalisation process, which proposes that extrinsically motivated behaviours can gradually become more and more self-determined, and explains how well-designed gamification could lead to more and more intrinsic motivation over time (Ryan & Deci, 2017).

2.3.3. Major debates and trends

In the literature on SDT and gamification, an ongoing and unresolved discussion is whether the use of extrinsic reward mechanisms such as points and leaderboards decreases or only adds to intrinsic motivation (Przybylski et al., 2010; Sailer et al., 2017). To support the predictions of CET, Deci et al. (1999) conducted a meta-analysis that found tangible, expected, and contingent rewards consistently harmed intrinsic motivation. More recent scholarship, however, suggests that reward undermining is a function of reward structure and informational framing, not just the presence of a reward, and that careful design of gamification would allow intrinsic motivation to remain intact even in the presence of extrinsic elements (Sailer et al., 2017; Misbauddin et al., 2025). This debate is still empirical and is directly relevant to the present study in that it is a certain disaggregation of the mechanical types.

2.3.4. Methodological approaches

In SDT-based educational research, a wide range of methodological tools have been used, such as well-designed survey instruments like the Basic Psychological Need Satisfaction and Frustration Scale (BPNSFS) and the Intrinsic Motivation Inventory (IMI), as well as experimental laboratory and field designs, and experience sampling methods (Ryan & Deci, 2017; Przybylski et al., 2010). Although longitudinal designs that can assess SDT's mechanistic claims over time are relatively scarce, mediation analysis, and especially in the context of SEM, has become the standard method for testing these claims in the educational arena.

2.4. Theoretical Integration of SDT and TPB

The reason why SDT and TPB are united here is that they describe different but successive parts of the actual process of intention formation to become an entrepreneur. SDT provides a reason for why certain gamification mechanics can create true quality engagement in the first place. Narrative, feedback, badges or social comparison, when used to support autonomy, competence and relatedness, encourage students to engage for real reasons and because they feel capable, rather than just doing what they are expected to do (Ryan and Deci, 2017; Sailer et al., 2017). TPB then picks up from there, explaining how this motivational state actually turns into a conscious intention to pursue entrepreneurship. Intrinsically motivated students may perceive entrepreneurship more positively, have greater self-efficacy to engage in entrepreneurship and have more favourable social norms regarding entrepreneurship, which correspond to attitude, perceived behavioural control and subjective norms, respectively (Ajzen, 1991). This entire process is not reflected in either theory. Although SDT does not mention any immediate cognitive predictors of intention, TPB provides information about these predictors without considering how educational design can support the motivation. Combining them together, then, provides the connection between gamification design, psychological need satisfaction, intrinsic motivation, and entrepreneurial intention, while maintaining the mediated pathway of the framework (Al-Jubari et al., 2019; Hagger and Chatzisarantis, 2009).

2.5. Theme 3: Gamification Mechanics in Entrepreneurship Education

2.5.1. Key concepts and definitions

According to the current literature on the field of educational technology, gamification is conceptually different from game-based learning (GBL) and serious games. While gamification involves the use of game design elements in non-game learning contexts without altering the pedagogical structure, GBL uses specially designed games as the main learning tools (Deterding et al., 2011; Sailer et al., 2017). The most popular mechanics in gamification literature are points systems (quantified feedback on performance); achievement badges (signals milestone attainment and social recognition); leaderboards (generates performance

vis-à-vis other participants); narrative challenge scenarios (embeds learning tasks within story-driven contextual frameworks); mastery-based feedback loops (sequences tasks to support progressive competence development) (Ruiz-Alba et al., 2019; Zainuddin et al., 2020).

2.5.2. Relevant theoretical models

In addition to SDT, Csikszentmihalyi's (1990) Flow Theory is often referred to in the context of the engagement effects of gamification, which suggests that optimal motivational states occur when perceived challenge and perceived skill are in dynamic equilibrium (Zainuddin et al., 2020). To better analyse gamification at different levels of abstraction, there is a need for a structurally precise vocabulary, which is provided by Deterding et al.'s (2011) Gamified Design framework that distinguishes between game mechanics (rules and tools), game dynamics (runtime system behaviours), and game aesthetics (emotional responses). More specifically, in the context of entrepreneurship education, the empirical gamification-entrepreneurial intentions model introduced by Ruiz-Alba et al. (2019) is the most closely related previous model and confirms a direct positive link between gamification and entrepreneurial intentions, but the mediation processes are not sufficiently theorised.

2.5.3. Major debates and trends

The proposed framework is overall consistent with the research that has been conducted on gamification and entrepreneurial intentions, but it is on an entirely different level. Ruiz-Alba et al. (2019) consider gamification an overall condition of education, while Sailer et al. (2017) and Xi and Hamari (2019) demonstrate that different gamification mechanics trigger very different psychological needs. Focusing on both of these roles reinforces the manuscript's approach of splitting the gamification into points, badges, leaderboards, narrative challenges, and mastery feedback, and not seeing it as one monolithic thing. The framework also differs from direct-effect models by integrating intrinsic motivation in the core, given that this could be the mechanism by which need-supportive design will actually impact entrepreneurial intention. This claim, though, comes with real conditions attached. The average effect is modest at best and dependent on the underlying study's rigour, as found by Sailer and Homner (2020) and quite negative motivational and performance effects have been reported by Hanus and Fox (2015) for a design centred around a reward. A mechanic is not necessarily equally good at performing repairs, as the model assumes. It suggests that informational, mastery-oriented, and autonomy-supportive features are more likely to maintain motivation than are features that are controlling, overly competitive or poorly matched to the task and that are given as rewards.

2.5.4. Methodological approaches

The majority of gamification studies use experimental and quasi-experimental designs, which allows one to isolate the effects of specific mechanics by comparing the conditions of a control group (Ruiz-Alba et al., 2019; Misbauddin et al., 2025). There has also been a trend towards using survey-based designs with validated gamification experience scales, but there are no psychometrically validated, mechanic-disaggregated instruments that can be found across several literature reviews (Sailer et al., 2017), which is a methodological limitation. Despite the potential to reveal the subjective motivational experience of gamified learning, qualitative approaches (such as think-aloud protocols and post-intervention interviews) have not yet been fully explored.

2.6. Theme 4: Generation Z, Digital Learning Behaviour, and Entrepreneurship

2.6.1. Key concepts and definitions

Generation Z is defined here to include students born after 1997 and before 2012, according to the definition in the manuscript. Some educational trends in this group are evident from the empirical evidence but do not warrant the assumption of a homogeneous group. A comparative study of students in the United States and Brazil identified preferences for applied learning, achievement, recognition, and learning that produces some visible, tangible difference (Seemiller et al., 2019). Hampton et al. (2020) determined that nursing students in Generation Z preferred lectures with audience-response technology, simulations, video, and case content when compared to assigned reading. In Malaysia, Mohd Ishak et al. (2022) found that both unimodal and multimodal learners prefer multimodal learning, and that kinaesthetic learning was a preferred approach among the learners. How feedback is delivered, and in what form, also matters a great deal to Generation Z students (Licas and Torres, 2024). Together, these studies support pedagogy that is interactive, rich in feedback, and grounded in application. Despite this, Hossain et al. (2023) reveal that the social conditions and perceived control still influence the entrepreneurial intentions of Bangladeshi students. Gamification, then, is relevant, but its suitability should be treated as a proposition dependent on context, not as some generational certainty.

2.6.2. Debates and trends

There is a growing debate on whether and how much ‘generalisable Gen-Z traits’ are shared across different cultural, economic, and institutional settings. Research in high-income and individualistic cultural contexts may overestimate the extent of entrepreneurial autonomy and risk-taking orientation among Gen-Z learners compared to those living in collectivistic and limited-resource settings like Bangladesh, where family obligation norms, economic uncertainties, and gender role expectations can play a significant role in shaping entrepreneurial intent formation (Hossain et al., 2023; Masroor et al., 2023; Alam et al., 2020). This cultural and contextual diversity is not thoroughly explored in the current entrepreneurship literature for Gen-Z.

2.7. Theme 5: Entrepreneurship Education and Entrepreneurial Capacity in Bangladesh

2.7.1. Key concepts and definitions

Findings from the study on entrepreneurial intention in Bangladesh indicate that no single factor can be responsible for entrepreneurial intention, but it is a combination of psychological and contextual factors. Hossain et al. (2023) find attitude, subjective norms, perceived behavioural control, and entrepreneurial resilience all relevant to how Generation Z students in Bangladesh form their intentions, while Uddin et al. (2022) show that entrepreneurship education can work through entrepreneurial passion specifically. Shahriar et al. (2024) go one step further and include access to finance and involvement in entrepreneurship programmes as key pathways in their own right. These studies make a strong case for educational intervention, but they also suggest that motivation alone may not be enough where students lack resources, institutional backing, or confidence in their own ability to act. Evidence from higher education adds a related digital constraint here. Aziz and Hossain (2024) have found that the access, resources, and digital literacy of Bangladeshi undergraduates are not equal. Combined, this literature suggests that institutional entrepreneurship support and perceived digital access can be considered as true contextual moderators and can be used to understand why Bangladesh is a suitable context to test whether motivational gains translate into entrepreneurial intentions upon introducing the element of resource constraints.

2.7.2. Debates and trends

One of the key debates in the literature on entrepreneurship in Bangladesh is whether the key limitations of entrepreneurial intention are psychological, such as low self-efficacy and risk aversion due to socioeconomic insecurity, or structural, such as lack of access to finance, weak intellectual property protection, and bureaucratic constraints on registering a business (Akhter et al., 2020; Hossain et al., 2023; Masroor et al., 2023). The evidence on which this theory is based suggests that, rather than a linear causal hierarchy, there is a recursive interaction between the psychological and structural. This directly supports the current theory's incorporation of institutional entrepreneurship support as a contextual moderator.

2.8. Research Gap Emerging from the Literature

This critical and systematic review of these five thematic domains shows a convergence of three mutually reinforcing gaps, coalescing to form the scholarly problem addressed by this conceptual framework. First, because the same gamification mechanics have been grouped into composite variables in so many empirical studies, the resulting literature is theoretically imprecise and practically inactionable, as it does not tell us which mechanics are effective for which groups of people and via which psychological mechanisms. Second, although SDT is a prominent theory in the literature, the operationalisation of intrinsic motivation as a formal, structurally specified mediator between exposure to gamification mechanics and entrepreneurial intention has been largely overlooked in the peer-reviewed literature, and thus, the presumed mediation is not yet confirmed. Third, the empirical evidence based on gamification to inspire entrepreneurial intention is heavily skewed towards high-income, Western or East Asian education, and so, its applicability to the structurally, culturally, and economically different Bangladeshi Gen-Z context is theoretically unfounded and empirically untested.

2.9. How the Proposed Research Addresses the Gap

Each of the identified gaps is directly addressed in the proposed conceptual framework and in a systematic manner. The framework provides a way to overcome the aggregation problem at the theoretical level by disaggregating five gamification mechanics and theorising their differential SDT need-satisfaction profiles, which can then serve as the basis for mechanistically precise empirical investigations. Intrinsic motivation is formally defined as a mediating construct in a TPB-based model of entrepreneurial intention (Hoang et al., 2020), which is a theoretically posited mechanism without being explicitly stated and tested as a proposition. The framework provides culturally and structurally sensitive theoretical claims to expand the geographical reach of the international literature and to increase the cross-cultural generalisability of SDT and TPB as explanatory frameworks in the field of entrepreneurship education research by contextualising all six propositions in the context of the higher education environment, digital access conditions, and entrepreneurship ecosystem in Bangladesh. As a whole, these contributions provide a valuable and innovative contribution to the existing field of study that addresses methodological, theoretical and contextual gaps identified in the literature reviewed (Masroor et al., 2023; Alam et al., 2024; Hossain et al., 2023; Ruiz-Alba et al., 2019; Jena, 2020; Misbaudhin et al., 2025).

3. Materials and Methods

3.1. Research Approach and Rationale

This study adopts a qualitative, interpretive research approach grounded in the philosophical traditions of constructivism and critical rationalism. Given that the primary objective of this research is to develop a theoretically integrated conceptual framework and advance formally

stated propositions rather than to test hypotheses against empirically collected data, a qualitative approach is not merely appropriate but methodologically necessary (Jaakkola, 2020; Foss & Saebi, 2017). Quantitative methods, by definition, require existing constructs, validated instruments, and pre-specified hypotheses to be subjected to statistical testing, conditions that presuppose the existence of a developed theoretical framework rather than its construction (Martínez-Gregorio et al., 2021). The present study occupies an earlier and equally indispensable stage of the scientific cycle: the conceptual and theoretical development phase, during which constructs are defined, relationships are theorised, and propositions are advanced to guide subsequent empirical inquiry (Cornelissen, 2017; Foss & Saebi, 2017). This positioning is consistent with a well-established tradition in management, entrepreneurship, and educational psychology research, where conceptual papers grounded in rigorous literature synthesis have generated foundational theoretical contributions that preceded and enabled extensive empirical programmes (Jaakkola, 2020).

3.2. Research Design

The design of the research is a conceptual paper, which is a type of research that is methodologically valid and academically appreciated that aims to develop new concepts, frameworks and propositions systematically by means of critical synthesis and reinterpretation of literature (Jaakkola, 2020; Gilson & Goldberg, 2015). In particular this study follows the theory-building through literature synthesis approach, where published empirical and theoretical work from multiple disciplinary streams is critically analysed and synthesised to present an integrated framework with greater explanatory power than any of the individual theories could offer on their own (Foss & Saebi, 2017; Cornelissen, 2017). Three procedural stages have been included in the design. The domain-specific literature review is the first step that is conducted in a structured manner through five thematic areas: entrepreneurial intention theory, Self-Determination Theory, gamification mechanics, learning behaviour of Generation Z and entrepreneurship education in Bangladesh. The second phase is the identification of theoretical gaps, convergences and tensions between these domains that drive the proposed framework. The third phase is the formalisation and statement of six propositions that are theoretically derived and which describe the directional relationships of the constructs in the framework and thus serve as a roadmap for subsequent empirical research.

3.3. Study Context and Setting

Bangladesh has been selected not only because of its under-representation in gamification studies, but also because it is a truly challenging environment in which motivational and structural explanations can be explored side by side. Hossain et al. (2023) show that entrepreneurial attitude, subjective norms, perceived behavioural control, and resilience all matter to the intentions of Bangladeshi Generation Z students. Uddin et al. (2022) and Shahriar et al. (2024) further point out that the relationship between intention and its actualisation is being influenced by entrepreneurship education, entrepreneurial passion, access to finance and programme support. Meanwhile, undergraduate students also experience unequal access to digital resources, limited resources and uneven digital literacy that can limit their full engagement in technology-supported learning (Aziz and Hossain, 2024). Bangladesh is, therefore, a country of interest for this integrated framework. SDT provides insights into whether gamified learning supports autonomy, competence, and relatedness and TPB provides insights into how this motivation is transformed into intention under specific social and perceived-control conditions. Bangladesh, then, serves as a boundary-setting context to test the validity of need-supportive gamification when the institutional and digital boundaries restrict the extent to which students can do what they are motivated to do.

3.4. Data Sources and Literature Search Protocol

As a conceptual study, the research does not involve primary data collection from human participants. The empirical and theoretical foundation of the framework is constructed from published academic literature sourced from internationally recognised, peer-reviewed databases. The literature search was conducted across Scopus and Web of Science (WoS), the two most comprehensive and rigorously curated bibliographic databases in the social sciences, ensuring that all cited works meet internationally accepted standards of academic quality and verifiability. The search strategy employed a combination of Boolean operators and controlled vocabulary terms, structured around the following keyword clusters: (“gamification” OR “game-based learning”) AND (“entrepreneurial intention” OR “entrepreneurship education”); (“Self-Determination Theory” OR “intrinsic motivation”) AND (“gamification” OR “educational technology”); (“Generation Z” OR “Gen-Z”) AND (“entrepreneurial intention” OR “higher education”); (“Bangladesh” OR “South Asia”) AND (“entrepreneurship” OR “entrepreneurial intention” OR “university students”). The temporal scope of the search was not restricted, given the historical depth required to engage with foundational theoretical frameworks such as SDT and TPB; however, particular analytical weight was afforded to studies published between 2015 and 2025 to ensure engagement with contemporary debates and methodological developments. Additional literature was identified through backward and forward citation tracing from seminal works identified in the initial database searches.

3.5. Inclusion and Exclusion Criteria

Inclusion and exclusion criteria were rigorously applied to make sure that the literature base that informed the conceptual framework is analytically coherent, contextually relevant, and methodologically credible. Studies were selected if they were published in Scopus- or WoS-indexed peer-reviewed journals, focused on at least one of the five thematic domains identified in the literature review framework, were written in English, and were empirically grounded, conceptually developed or theoretically substantive in their contribution. Studies were excluded if they were only published in conference proceedings without journal indexing, were not available in full text via institutional access, were found to have significant methodological limitations recognised by later literature or were published in journals that did not have verifiable indexing in Scopus or WoS. This exclusion criterion is directly relevant to the study's desire to cite only verified, citable, high-quality scholarly sources as a matter of scholarly integrity and reproducibility.

3.6. Analytical Procedure

The analysis of the retrieved literature is done through a critical and thematic synthesis approach which differs from a systematic literature review (SLR) that prioritises exhaustive coverage and meta-analytical aggregation, and focuses more on the theoretically driven, interpretive engagement with the literature oriented towards the construction of a framework (Torraco, 2016; Jaakkola, 2020). Three analytical procedures were applied sequentially. Domain mapping was first carried out in each of the five thematic areas to identify the key theoretical perspectives, findings, methodological approaches, and debates in relation to the proposed framework. Second, cross-domain synthesis was done to identify convergences and divergences at the theoretical level across the five thematic areas and specifically convergences at the construct level and gaps at the mechanism level which drive the integrative claims of the framework. Thirdly, the process of proposition derivation was carried out deductively and abductively, that is, propositions were derived deductively from the accepted theoretical premises in SDT and TPB, and abductively by moving beyond the existing single-theory models to create a new integrated explanatory model that better explains the phenomenon under

investigation (Foss & Saebi, 2017; Cornelissen, 2017). The resulting propositions were judged by three criteria: theoretical grounding (derivability from existing theory), logical coherence (internal consistency with other propositions and with the constructs of the framework), and empirical testability (amenability to future quantitative and/or experimental study).

3.7. Rigour, Credibility, and Trustworthiness

Qualitative and conceptual research does not use the psychometric criteria of reliability and validity, which are used in quantitative research, but rather the criteria of credibility, transferability, dependability, and confirmability (Jaakkola, 2020). To assure credibility, only Scopus and WoS indexed sources were used, inclusion and exclusion criteria were applied, and all propositions were based on existing theories, and not on unsupported assertions. Transferability is dealt with by the stated boundary conditions and contextual moderators in the framework, which allows researchers in similar emerging economy contexts to make judgements about the applicability of the framework in their context. Dependability is achieved by clearly reporting the literature search process, the analysis methods used, and the reasoning behind the theoretical premises and propositions (Otache et al., 2024). Confirmability is provided by the use of verifiable, retrievable sources and the distinction between the theoretical synthesis that is derived from literature and the original conceptual contribution made by this research. The theoretical coherence of the framework was also assessed by means of critical self-scrutiny of each proposition in relation to the criterion of logical non-contradiction with the established SDT and TPB theoretical tenets.

3.8. Ethical Considerations

This study is not based on primary data from human subjects and therefore does not require institutional ethical clearance in the traditional sense but does have academic ethical responsibilities that have been carefully followed throughout the study. First, that all the cited works have been represented accurately, that no work has been misquoted, that no work has been selectively cited, and that no work has been used out of context to support the claims of the framework. Second, throughout the work, the difference between the theoretical work of previous researchers and the original conceptual work of the present research has been maintained and, in this regard, the rules of academic attribution and intellectual honesty have been followed (Masroor et al., 2023; Alam et al., 2024). Third, there are no false, embellished or referenced citations of other works. Fourth, the study makes clear to readers, reviewers, and the academic world its limitations, such as the lack of primary empirical data and the need for future empirical testing of the proposed propositions and does not exceed the limits of its claims.

4. Proposed Conceptual Framework and Discussion

4.1. Overview of Literature Synthesis

The critical thematic synthesis of the five domains of literature reviewed in this study resulted in four main findings that were combined to form the evidential basis for the proposed conceptual framework. First, the literature indicated that there are significant differences in how discrete gamification mechanics relate to SDT's basic psychological needs, with gamification mechanics related to immersion and narrative being more strongly related to autonomy need satisfaction and gamification mechanics related to achievement being more consistently related to competence need satisfaction (Sailer et al., 2017; Xi and Hamari, 2019). Second, the satisfaction of the three SDT needs (autonomy, competence, and relatedness) was found to be a key and positive determinant of entrepreneurial intention among university students in developing economy settings in several empirical studies, and the effect sizes were always greater than those of the other motivational pathways (Nguyen and Nguyen, 2023).

Third, gamified entrepreneurship education was determined to have a positive impact on digital entrepreneurial intention when it included interactive, challenge-based, and feedback-rich gamification mechanics, with the motivational quality of engagement proving to be a better predictor of outcomes of intention than the mere exposure to gamification (Misbauddin et al., 2025; Ruiz-Alba et al., 2019). Fourth, the literature on Bangladesh also indicated that perceived behavioural control (PBC) and institutional support (IS) are the most significant moderators of the intention formation process among the Gen-Z university students and that the disparity in digital access and gender differentiated structural constraints are additional boundary conditions that affect the motivational effectiveness (Hossain et al., 2023; Masroor et al., 2023; Alam et al., 2020).

4.2. The Proposed Conceptual Framework

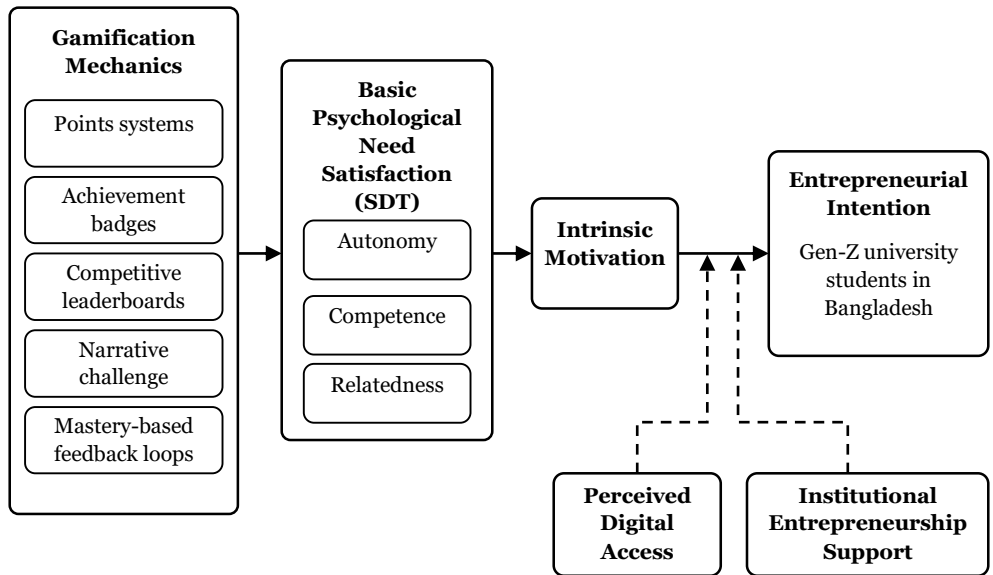


Figure 1: Proposed Conceptual Framework

The antecedent inputs of the framework remain five gamification mechanics, each of which triggers the basic psychological needs at the core of SDT and, in turn, increases intrinsic motivation which remains the key intervening variable throughout. Then, SDT provides an explanation for why good, gamified entrepreneurship education can generate good quality engagement at all. TPB expands upon this by presenting the cognitive conditions for that motivational drive to induce entrepreneurial intention. A more positive attitude towards entrepreneurship is related to a higher level of internal motivation to become a business owner, entrepreneurial control beliefs, and a more relevant perception of others' support to a potential career in entrepreneurship. They correspond to attitude, perceived behavioural control, and subjective norms respectively (Ajzen, 1991; Al-Jubari et al., 2019). TPB, in other words, is still able to explain the outcome side of the pathway that is already set, and SDT remains the first choice in regard to the motivational mechanism itself. This is because the six propositions earlier outlined remain central to the framework, and intrinsic motivation remains at the heart of the framework. Perceived digital access and institutional entrepreneurship support are still contextual moderators impacting the association between intrinsic motivation and

entrepreneurial intention among Bangladeshi students of Generation Z. The main route is indicated in Figure 1.

The gamification mechanisms are related to the following basic psychological needs: The points systems are mostly related to competence need satisfaction via quantified performance feedback (Sailer et al., 2017; Xi & Hamari, 2019). Achievement badges are linked to the satisfaction of need for competence and need for relatedness because they indicate the achievement of a milestone and provide social recognition (Ruiz-Alba et al., 2019; Misbauddin et al., 2025). Competitive leaderboards are mainly linked to relatedness need satisfaction, via social comparison and community membership, with competence-enhancing effects being moderated by the intensity of the competitive hierarchy (Xi & Hamari, 2019). Narrative challenge scenarios have been linked most tightly to satisfaction of the need for autonomy, through the opportunity to problem-solve and through contextual immersion (Sailer et al., 2017; Zainuddin et al., 2020). Mastery-based feedback loops are linked to competence, as well as to autonomy need satisfaction, through iterative skill development and progression at one's own pace (Ryan & Deci, 2000; Misbauddin et al., 2025).

4.3. The Six Formal Propositions

The literature synthesis resulted in 6 formally stated propositions which delineate the relationships in the proposed framework. The following is a brief statement of the theoretical and empirical evidence in support of each proposition.

Proposition 1: It is proposed that narrative challenge scenarios in gamified entrepreneurship education are more likely than points-based approaches to support autonomy and competence need satisfaction and, consequently, intrinsic motivation among Generation Z students. The literature consistently found that immersion and gamification elements related to the narrative were the most significant in terms of predicting the satisfaction of the autonomy need, whereas points-based features were mostly functioning as competence-contingent feedback but failed to satisfy the volitional component of autonomy (Xi & Hamari, 2019; Sailer et al., 2017). These differences are further supported by the research that showed that the use of meaningful context in the form of a narrative in educational media significantly improves self-directed learning in Gen-Z students in the learning process of digital media (Misbauddin et al., 2025).

Proposition 2: It is proposed that mastery-based feedback loops support competence need satisfaction and thereby strengthen intrinsic motivation, which is expected to contribute positively to entrepreneurial intention among Generation Z students in Bangladesh. This was supported by several empirical studies that found that the most consistent positive predictors of intrinsic motivation in educational settings are feedback systems that signal competence and support successive skill acquisition (Ryan & Deci, 2000; Przybylski et al., 2010; Ratten & Usmanij, 2021). Intrinsic motivation was found to have a significant positive effect on entrepreneurial intention ($\beta = 0.769, p < 0.01$) and the relationship was partially mediated by self-efficacy in the study of students in Indonesian universities. Moreover, gamification in online entrepreneurship training with progressive feedback structures was shown to have a positive impact on the intention to become a digital entrepreneur among university students in the context of a developing economy (Nguyen and Nguyen, 2023).

Proposition 3: It is proposed that achievement badges are more likely to support competence need satisfaction and entrepreneurial intention when they recognise meaningful entrepreneurial skill milestones rather than generic participation. The literature revealed that there is a key difference between milestone-based and participation-based badge systems in how they motivate (Sailer et al., 2017; Xi & Hamari, 2019). When gamification features are used to indicate achievement, such as badges that are given on meaningful achievement

thresholds (Secundo et al., 2021), they were found to have a positive relationship to competence need satisfaction but showed null or marginally negative effects when used as participation rewards (Xi & Hamari, 2019; Ruiz-Alba et al., 2019).

Proposition 4: It is proposed that competitive visibility has a curvilinear relationship with intrinsic motivation. Moderate visibility may support competence and relatedness, whereas highly hierarchical leaderboards may weaken autonomy and competence through unfavourable social comparison. In line with SDT's Cognitive Evaluation Theory, findings revealed that controlling informational events, such as competitive ranking with a high hierarchy, were likely to decrease intrinsic motivation because of a threat to perceived competence and autonomy (Ryan & Deci, 2000; Przybylski et al., 2010). Extreme competitive visibility demotivated the farmers, which was theorised to be further exacerbated in collectivist cultural contexts like Bangladesh, where face-saving is important and there is an aversion to public failure (Hossain et al., 2023; Masroor et al., 2023).

Proposition 5: It is proposed that intrinsic motivation mediates the relationship between participation in gamified entrepreneurship education and entrepreneurial intention, with stronger indirect relationships expected for mechanics that support autonomy and competence than for mechanics experienced primarily as external regulation. The aforementioned core claim was corroborated by the findings of several studies that found a relationship between SDT-based intrinsic motivation and entrepreneurial intention in digital and gamified learning environments (Nguyen and Nguyen, 2023). The differential mediation claim, which posits that the mechanics of need-supportive activities lead to stronger mediated effects than those of extrinsically regulating activities (Shahriar et al., 2024), was based on the meta-analytic findings of Deci et al. (1999) that tangible and contingent external rewards reliably reduce intrinsic motivation, whilst informational and competence-affirming feedback events reliably increase it (Ryan & Deci, 2017).

Proposition 6: It is proposed that institutional entrepreneurship support strengthens, while perceived digital access barriers weaken, the relationship between intrinsic motivation and entrepreneurial intention. These conditional relationships may be more pronounced among female and rural Generation Z students in Bangladesh. The study in Bangladesh indicates that the conversion of motivation into entrepreneurial intention is dependent on the perceived feasibility of entrepreneurship and the perceived entrepreneurship support. Hossain et al. (2023) have found attitude, subjective norms and perceived behavioural control are relevant predictors among the generation Z university students. Uddin et al. (2022) and Shahriar et al. (2024) further state that entrepreneurship education, entrepreneurship programme participation, and financial access can all help bolster the actualisation of intention. Digital conditions also play a role here because the meaningfulness of students' use of technology-supported learning can be hindered by unequal access, resources, and literacy (Aziz and Hossain, 2024). However, none of these studies directly prove that there is stronger moderation for female or rural students. This difference between subgroups is proposed here as a hypothesis that has yet to be empirically tested and not presented as a known difference that has been confirmed. Future studies could assess the two moderators separately and conduct multigroup analysis to determine if the relationships are indeed different by gender and by location in Bangladesh. This ensures the contextual argument of the framework is maintained, while establishing a clear division between what was already known and the manuscript's new conceptual argument.

4.4. Summary of Framework Construct Relationships

Table 1 provides a summary of the five gamification mechanics, the psychological need-satisfaction profile of each and the directionality of the relationship with intrinsic motivation that has been found in the literature synthesis.

Table 1: Gamification Mechanics, Psychological Need Satisfaction and Proposed Relationships with Intrinsic Motivation

Gamification Mechanic	Primary Need(s) Satisfied	Motivational Quality	Direction of Effect on Intrinsic Motivation	Supporting Literature
Points Systems	Competence	Extrinsic/ Informational	Conditional positive	Sailer et al. (2017); Xi and Hamari (2019); Zainuddin et al. (2020)
Achievement Badges	Competence; Relatedness	Extrinsic/ Social	Positive (milestone-aligned only)	Ruiz-Alba et al. (2019); Sailer et al. (2017); Xi and Hamari (2019); Martínez-Gregorio et al. (2021)
Competitive Leaderboards	Relatedness	Extrinsic/ Competitive	Curvilinear	Sailer et al. (2017); Xi and Hamari (2019); Zainuddin et al. (2020); Ruiz-Alba et al. (2019)
Narrative Challenge Scenarios	Autonomy; Competence	Intrinsic	Positive	Sailer et al. (2017); Zainuddin et al. (2020); Secundo et al. (2021); Cui and Bell (2022); Adeel et al. (2023)
Mastery-Based Feedback Loops	Competence; Autonomy	Intrinsic	Positive	Sailer et al. (2017); Zainuddin et al. (2020); Nguyen and Nguyen (2023); Al-Qadasi et al. (2024); Fan et al. (2024)

The framework and its six propositions collectively constitute the principal scholarly output of this conceptual study, providing a theoretically integrated, contextually grounded, and empirically testable account of how gamification mechanics drive entrepreneurial intention through intrinsic motivation among Generation Z university students in Bangladesh.

4.5. Discussion

4.5.1. Interpretation of the proposed framework

The framework needs to be understood as a description of a process of pedagogical design becoming an entrepreneurial intention, and not as evidence that gamification will always generate such an intention. Its central point is simply that mechanics matter because students interpret them in quite different ways. A challenge that is based on a narrative can provide genuine choice and context, and feedback for mastery can indicate a true and developing skill. Points, badges, and leaderboards can still be useful too, but their motivational value depends entirely on whether students experience them as informative or as controlling. Intrinsic motivation, thus, is the link between the design of a learning environment and the deliberate process referred to by TPB. The two contextual moderators provide a reason why similar designs will not necessarily work the same for everyone. Institutional entrepreneurship support may make it seem like an entrepreneurial path is a viable one, and limited digital access may hinder true participation. The framework, then, shifts the question away from whether

gamification works towards the conditions under which particular mechanics might actually support entrepreneurial intention, keeping the six propositions intact while setting clear limits for future testing in Bangladesh and comparable settings.

4.5.2. Comparison with existing literature

The proposed framework is broadly consistent with studies that link gamification to entrepreneurial intention, but it explains the relationship at a different level. Ruiz-Alba et al. (2019) model gamification as a broad educational condition, whereas Sailer et al. (2017) and Xi and Hamari (2019) show that individual mechanics activate different psychological needs. Bringing these positions together supports the manuscript's decision to disaggregate points, badges, leaderboards, narrative challenges, and mastery feedback. The framework also differs from direct-effect models by positioning intrinsic motivation as the central mechanism through which need-supportive design may shape entrepreneurial intention. This claim remains conditional. Sailer and Homner (2020) find that average effects are modest and sensitive to study quality, while Hanus and Fox (2015) report adverse motivational and performance outcomes for a reward-centred design. Accordingly, the model does not assume that all mechanics are beneficial. It proposes that informational, mastery-oriented, and autonomy-supportive features are more likely to sustain motivation than controlling, highly competitive or weakly aligned rewards.

4.5.3. Mixed evidence and boundary conditions

The ambivalent results are at the core of the reading of this framework. Positive reviews indicate that gamification can enhance engagement, achievement, and social connection, especially when the game elements are aligned with learning goals (Zainuddin et al., 2020). This picture is complicated by Sailer and Homner (2020), however, who demonstrated that the motivational and behavioural effects are not so stable when only the more rigorous studies are included. Hanus and Fox (2015) take it one step further by demonstrating that the more badges, leaderboards, and competition is embedded in a design, the more it can lead to a decrease in intrinsic motivation and academic performance over time. Rodrigues et al. (2022) further note that as novelty fades, responses also fade and learners just get accustomed to the intervention. These conflicts validate the manuscript's choice to focus on the level of individual mechanics, instead of gamification as a category. Narrative challenges and mastery feedback can likely foster autonomy and competence, whereas points, badges, and leaderboards can become controlling when they focus on monitoring or status or just collecting rewards. The relationships proposed here, then, should be read as conditional expectations rather than universal effects, with design quality, exposure period, learner characteristics, and institutional context all standing as genuine boundary conditions for future testing.

4.5.4. Theoretical implications

There are three interrelated contributions to theory in this framework. First, it addresses the gamification aggregation problem by offering a mechanistically precise SDT taxonomy, which will allow future research to go beyond composite indices to construct-level precision (Xi & Hamari, 2019). Second, by integrating SDT's mediation logic with TPB's attitudinal antecedents, the study generates a hybrid model that explains not only motivational activation but also intention conversion—a conceptual advance over single-theory applications (Krueger et al., 2000). Third, the explicit theorisation of emerging-economy moderators allows for extending both SDT and TPB's cross-cultural scope, challenging the implicit Western biases and establishing boundary conditions for applicability in the Global South (Hossain et al., 2023). These implications suggest that the propositions can be tested empirically using PLS-SEM mediation models, experimental manipulations, and multi-group analyses (Bangladesh

vs other South Asian contexts), thereby starting a cumulative research programme based on the current framework.

4.5.5. Practical and policy implications

This framework provides actionable advice for universities in Bangladesh and other developing countries with a context where entrepreneurship education is already in place, digital access is unequal, and institutional resources are limited. Course designers may consider utilising narrative challenges in which students can make realistic venture decisions and mastery feedback in which students can see real progress in opportunity recognition, market validation, and pitching. The points, badges and leaderboards must be used in direct support of these learning goals, and not as standalone rewards. Institutions that have a secure digital platform can utilise platform-based simulations, and universities with limited resources can modify the same activities for low bandwidth, mobile, or classroom. Implementation should also link teaching with mentorship, incubation, industry engagement, and availability of information on financing, to support the motivation with credible opportunities to do so. Universities should test the design, monitor participation among various student cohorts, and tweak the mechanics that inadvertently exclude or generate undue competition for students. These recommendations are not specific to any one institution in Bangladesh, but are about design principles that are adaptable, compatible with existing infrastructure and ecosystem support, and therefore to any one university or national programme.

4.5.6. Contribution to knowledge

This research offers a novel, theoretically integrated conceptual framework that fills the existing literature gaps in the gamification, motivational psychology and entrepreneurship education fields and addresses the entrepreneurial intention gap in Bangladesh. It breaks down mechanics, formalises mediation and incorporates contextual moderators, enabling it to be transferred to research in the Global South, where SDT-TPB integration is viable beyond high-income contexts. The six propositions provide a structured empirical agenda, thus facilitating the move from theory to testable science in the framework. Together, these components take the research beyond a description of the context to a generalisable theoretical contribution, with continuous implications for entrepreneurship pedagogy in resource-poor contexts.

5. Conclusion

This study develops a theoretically integrated conceptual framework to explain the mechanism of action through which the five separate gamification mechanics, namely points system, achievement badges, competitive leaderboards, narrative challenge scenarios and mastery-based feedback loops influence entrepreneurial intention by the mediating mechanism of intrinsic motivation among the university students of Generation Z in Bangladesh. The framework is based on two theories: Self-Determination Theory and the Theory of Planned Behaviour and illustrates how these mechanics vary in their satisfaction of the basic human psychological needs of autonomy, competence, and relatedness. The contextual factors (perceived digital access and institutional entrepreneurship support) moderate the factors, and intrinsic motivation becomes the key psychological pathway. These directional relationships are stated in six formal propositions, which differentiate need-supporting mechanics from conditionally extrinsic ones, considering the structural realities of Bangladesh (Masroor et al., 2023; Hossain et al., 2023). The results directly address the three important gaps mentioned in the introduction: lack of theoretical integration of gamification mechanics, lack of mediation through intrinsic motivation, and lack of consideration for emerging-economy contexts. The framework overcomes the imprecision of aggregation by disaggregating and mapping the SDT need-satisfaction profiles of mechanics. By formalising mediation through validated

psychological constructs, it establishes causal logic absent in prior direct-effects models. It brings universalist theories into contextually realistic terrain through the embedding of Bangladesh-specific moderators. All five research objectives are met, ranging from mechanical differentiation, proposition derivation, design principles, to cross-cultural extension (Alam et al., 2020; Xi & Hamari, 2019).

From the synthesis emerge three main insights. First, the effectiveness of gamification does not depend on the presence of the mechanics; rather, it depends on the motivational quality of the mechanics: narrative immersion and mastery feedback are more effective than extrinsic rewards, and they satisfy autonomy and competence and are thus more likely to lead to persistent intention than to compliance. Second, collectivist contexts like Bangladesh amplify relatedness mechanics' potential whilst heightening leaderboard risks, necessitating cultural calibration absent from Western-centric models. Third, structural moderators, including digital equity as the most prominent one, affect the potential for scalability, and the motivational gains are lost without structural prerequisites, which highlights the need for entrepreneurship education to be integrated into broader ecosystems (Masroor et al., 2023). These insights shift gamification from novelty in the educational sphere to a finely tuned motivational framework. The study is an original and replicable framework that connects gamification, motivational psychology, and entrepreneurship education, and also fills significant gaps in the Global South. It introduces a new, groundbreaking extension in the research of entrepreneurial intention in the form of mechanic-level precision, provides SDT-TPB integration with empirical propositions, and transforms Bangladesh from a peripheral case to a theoretical generative case. It contributes to the cumulative body of knowledge by providing testable hypotheses for PLS-SEM mediation, experimental designs, and longitudinal intention-behaviour studies, which takes the role of conceptual scholarship in theory-building cycles (Ruiz-Alba et al., 2019) to a higher level.

Four directions should be the focus of future scholarship. Empirical testing of the six propositions using PLS-SEM mediation analysis among multiple samples of Gen-Z Bangladeshis across strata, testing for the mechanical disaggregation and moderation effects. Second, the experimental manipulation that compared the various combinations of narrative and feedback and the measurement of intention pre-post intervention. Third, longitudinal tracking from gamified course participation through venture ideation or incubator enrolment, addressing the intention-behaviour gap. Fourth, comparative studies that go beyond the scope of the framework to other countries like India, Pakistan, or Indonesia, which explore cultural boundary conditions of relatedness mechanics. Thematic analysis of students' gamification experiences using NVivo would also help to shed light on subjective motivational dynamics (Masroor et al., 2023), thereby improving the insights gained from mixed methods approaches. This framework can be considered as a roadmap towards taking youth from gamified engagement to entrepreneurial action, in the context of an intention-poor and youth-rich Bangladesh. It empowers teachers and policymakers to translate demographic dividend into entrepreneurial vibrancy and achieve national aspirations, such as Smart Bangladesh 2041, through precision engineering of motivation, using contextually relevant mechanics. The propositions call for empirical research, for more than just theoretical progress, but for socioeconomic results in the field where they are needed.

Declarations

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Conflicts of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability Statement

Data sharing is not applicable to this article as no new primary data were created or analysed in this conceptual study.

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