



## **Simulation Pedagogy and Learner Engagement in a Finance course: A South African Higher Education Perspective**

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### **ABSTRACT**

The aim of this study was to examine the relationship between simulation-based experiential learning (SBEL) and overall student satisfaction, with deep and surface learning serving as mediating variables, at a higher education institution. The primary objective of the study was to assess the level of student satisfaction following the implementation of an SBEL project with students enrolled in finance-related courses. A quantitative cross-sectional research design was used with data collected from a sample of 288 finance and business students after the completion of a client simulation project. The sampling method was purposive. A partial least squares structural equation model was applied, with simulation-based experiential learning serving as an exogenous variable that predicts student satisfaction. The data was analysed using SmartPLS. The primary findings of the study revealed that simulation-based experiential learning had a direct, positive, and significant impact on student satisfaction and the adoption of deep learning approaches. A secondary finding included, deep learning approaches also had a direct positive impact on student satisfaction. The mediated path revealed that SBEL enhanced satisfaction through the deep learning approach, whereas the relationship with surface learning was found to be insignificant. The study contributes to the empirical evidence on SBEL in South African higher education from a finance and business students' context. In conclusion, the study highlights the importance of aligning experiential learning with educational strategies. Policy recommendations included formal integration of SBEL into curricula, faculty training in simulation design, and assessment reforms that reward deep learning.

### **KEYWORDS**

Simulation-Based Experiential Learning; Deep Learning; Surface Learning; Finance; Structural Equation Model.

### **INTRODUCTION**

As the world of work changes, higher education institutions are rethinking the approaches they use to prepare students for the workplace. This rethink is in response to an increasing call for academic institutions to bridge the gap between theoretical knowledge and real-world application (Adib, 2024). As a result, higher education institutions have taken the initiative to integrate practical and hands-on learning strategies into their curricula (Adib, 2024; Bakoush, 2022). Among these strategies is Simulation-Based Experiential Learning (SBEL) an approach used to improve student engagement, critical thinking and learning outcomes through simulating real-world environments (Chen et al., 2025; McHauser et al., 2020). Through simulated real-world scenarios, students are required to apply the knowledge they have acquired and problem-solving skills in an interactive format (Tiwari et al., 2014). While SBEL has been extensively examined in various disciplines, including medical education, business, and engineering, as observed by Uppor et al. (2024) and Jallad (2025), its application in South African

higher education remains relatively new. Traditional instruction approaches still dominate many university classrooms in South Africa, despite increasing calls for curriculum transformation and the adoption of student-centred learning models (Puren et al., 2022; Schreck et al., 2022). As such, there is a growing recognition of the need to introduce innovative teaching methods that align with industry skills and needs, thereby enhancing student satisfaction.

In addition to the above-mentioned disciplines, SBEL can also be useful in the context of finance education, where abstract concepts challenge students' understanding and engagement. The use of exercises that simulate client interactions, financial planning scenarios, or market fluctuations provides students with an opportunity to apply their knowledge in a practical setting. According to Sharma et al. (2018) and Carenys et al. (2017), this approach enhances learning relevance and fosters better student engagement. However, despite these perceived advantages, empirical evidence on SBEL's effectiveness in enhancing student satisfaction in South African higher education remains limited. A study by Puren et al. (2022) on experiential learning practices in South African higher education revealed that, although experiential learning is gaining momentum, its integration remains inconsistent across institutions and disciplines. While acknowledging that experiential learning is essential for improving students' social responsiveness and critical thinking, the study also noted that its uptake across South African Universities was low due to constraints such as resource limitations, institutional inertia, and a lack of trained staff (Puren et al., 2022).

Similar observations were made by Thuketana (2020), who also noted how experiential learning could improve students' perception skills and emotional intelligence when integrated in community projects. Furthermore, McPherson-Geyser et al. (2020) suggested that experiential learning activities promote meaningful engagement and improve students' comprehension skills. Another study carried out from a South African context by Schreck et al. (2022) further argued that experiential teaching models stimulated reflective practice and enhanced learners' connection to course content. These studies provide evidence of the positive educational value of experiential learning in a South African context. However, they fell short of addressing the impact of simulation-based experiential learning from a business perspective, especially in the finance discipline.

However, outside the South African context, Bakoush (2022) noted that students involved in financial simulations had higher levels of satisfaction compared to those receiving traditional instruction. These findings also align with those of Sharma et al. (2018), who observed that experiential learning in simulated trading environments enhanced students' perception of real-world situations and encouraged active participation. Similar results were also noted in another study by Chen et al. (2025), suggesting that simulations improved student satisfaction. However, the extent to which these findings are relevant from a South African higher education context remains uncertain. Additionally, a growing body of literature suggests that the effectiveness of SBEL may also depend on the learning approaches adopted by students. According to Adib (2024) and Kageyama et al. (2022), deep learning approaches, which focus on critical thinking and connecting new knowledge to existing ideas, are particularly well-suited for experiential learning. On the other hand, surface approaches, which focus on memorisation with minimal engagement, have been observed not to interact well with experiential approaches (Burdon & Munro, 2017; Okoro & Tembo, 2025). There is a paucity of empirical studies that have attempted to model the mediating role of these approaches in the relationship between SBEL and student satisfaction. Consequently, in a systematic review of literature on experiential learning, Gittings et al. (2020) called for an examination of how individual learning styles interact with experiential approaches to shape students' educational satisfaction and performance. As such, the key issue is the limited empirical evidence on how SBEL affects students' satisfaction with finance-related courses and how this relationship is influenced by students' deep versus surface learning approaches, especially in the context of South African higher education. Therefore, the current study makes two contributions. Firstly, it examines the impact of SBEL on the satisfaction of finance students in South Africa. Secondly, it models the mediating role of deep and surface learning approaches on the relationship between SBEL and student satisfaction. As such, the study highlights the effectiveness of experiential learning in enhancing students' learning experiences and how this, in turn, leads to satisfaction across both deep and surface learning styles.

Based on the aim of the study, the following questions.

- What is the effect of SBEL on student satisfaction?
- What is the effect of deep learning through SBEL on student satisfaction?
- What is the effect of surface learning through SBEL on student satisfaction?

## LITERATURE

The foundations of experiential learning are based on the works of Kolb's (1984) experiential cycle of learning.

According to Kolb (1984) learning is a transforming continuous cycle based on experience, reflection, conceptualisation and experimentation. Kolb (1984) argued that effective learning occurs when learners are actively engaged in an experience, reflect upon it, derive theoretical insights, and apply those insights in practice. The theory aligns with the constructivist perspective, which posits that knowledge is created through one's interaction with their environment (Alsharif, 2014; Lymperis, 2020). In this regard, the use of simulations supports Kolb's (1984) theory by providing an artificial yet realistic environment where students can experience the Kolb experiential learning cycle. From this, approaches such as the SBEL, which emphasise real-world application, critical thinking, and engagement, have been integrated into learning practices (Kageyama et al., 2022). SBEL has been widely adopted and utilised in practice-oriented fields, including medical education and engineering (Adib, 2024; Uppor et al., 2024). However, it has not been as extensively applied in the field of finance education, especially in the context of South Africa, and limited studies have investigated how different student learning approaches interact with experiential learning to influence student satisfaction.

### **Student Satisfaction: Theoretical Perspectives**

Student satisfaction is a concept that results from the match between what students expect and their actual academic experiences (Chen et al., 2025; Sharma et al., 2018). Further, pedagogical literature suggests that student satisfaction in education is attained when pedagogical strategies align with students' needs, interests, and goals (Chen et al., 2025; Sharma et al., 2018). Accordingly, the outcome of such alignment would be increased motivation, involvement, engagement and ultimately satisfaction (Alsharif, 2014; Chen et al., 2025; Lymperis, 2020). A study by Tahir and Fatima (2023) reported that student involvement has a positive impact on student satisfaction. Additionally, student involvement often refers to physical and psychological energy expended by students on an academic project (Astin, 1984). For example, in SBEL, student satisfaction comes from being involved and seeing the simulated environment as realistic and practical (Gittings et al., 2020). However, satisfaction also depends on students' approach to learning. Some are motivated by curiosity and the desire to understand (deep learning) while others are by the desire to pass and move on (surface learning) (Gittings et al., 2020; Randall et al., 2025). Therefore, theory suggests that the different learning styles affect how students respond to experiential methods (Gittings et al., 2020; Randall et al., 2025). The manner in which students respond to experiential methods provides an indication of their impact on both deep learning and surface learning. In spite of this theoretical link, few empirical studies have gone on to model how deep and surface learning mediate the relationship between SBEL and student satisfaction as will be done under the current study.

### **Empirical Evidence of Simulation-Based Experiential Learning**

Numerous studies have been conducted across various contexts to evaluate the educational value of simulation-based experiential learning. For instance, Adib (2024) conducted a quasi-experimental study from a European Business School context to examine how business simulations influenced student attitudes toward sustainability. Using pre- and post-surveys with a sample of 112 students, the study found statistically significant improvements in sustainability awareness and reflective engagement. However, this study did not consider student satisfaction as part of its scope, nor did it look at the mediating mechanisms of deep and surface learning in the process. Similarly, Chen et al. (2025) considered the role of instructor facilitation in shaping student satisfaction and flow during business simulation games using a sample of 305 Chinese students. The study was based on classroom experiments, and the data were analysed using structural equation modelling. Study findings indicated that active instructor engagement significantly enhanced student engagement and satisfaction. However, the study did not take into account student characteristics, which may explain variations in satisfaction. Furthermore, Burdon and Munro (2017) employed a mixed-methods approach to evaluate whether experiential methods were worthwhile from the perspective of Australian accounting students. The study's results showed that students appreciated the real-world relevance and interactivity of the simulations. However, some expressed frustration with the weak alignment between simulation content and formal assessments (Burdon & Munro, 2017). The study's findings highlight the need for aligning experiential learning with learning evaluation structures.

On the other hand, Tiwari, Nafees and Krishnan (2014) adopted a quantitative approach to measure the effectiveness of simulation on perceived learning among 207 MBA students. The study employed regression techniques to examine the relationship between simulation exposure and perceived effectiveness, revealing a significant positive correlation. However, the study focused on perceived learning and did not consider student satisfaction or deep and surface learning as mediating variables, unlike the current study.

Bakoush (2022) examined the impact of simulation-based learning on student satisfaction with a focus on the field of finance. The study employed partial least squares structural equation modelling with survey responses from 152 students at a European university. The findings revealed a positive relationship between simulation and student satisfaction. However, the current study is different in that it will be based on the South African higher education

context and will include mediating variables in the model. Additional studies by Sharma et al. (2018) and Carens et al. (2017) investigated simulation environments in trading and accounting, respectively. Sharma et al. (2018) found that exposure to financial trading rooms improved students' perceptions of real-world preparedness. On the other hand, Carens et al. (2017) noted that simulation and use of video games enhanced student motivation and outcomes with differences arising from gender and academic background. However, the studies did not capture the effects of deep and surface learning and how they may contribute to student satisfaction. Randall et al. (2025) and Pitic and Irimiaş (2023) examined engagement and emotional responses in simulation-based experiential learning. Randall et al. (2025) found that first-year business students exposed to simulation showed higher engagement, while Pitic and Irimiaş (2023) found that business simulation games improved students' skills development and academic experience.

From a South African context, literature indicates that experiential learning is gaining momentum; however, studies on the subject have largely focused on project-based learning, community engagement, and other fields, rather than the finance field (Council on Higher Education, 2011; Dhliwayo, 2008; Lubbe & Svensson, 2022; Botha, 2014; Malan, 2021; Wolmarans, 2005). Puren et al. (2022) evaluated the impact of experiential learning using four spatial learning modules. Study findings showed that experiential learning enabled students to develop an appreciation for the practical interventions required in urban development, while also contributing significantly to lecturer development. However, the study fell short of explicitly examining the impact of experiential learning on student satisfaction. In a study by Mayombe (2024), it was observed that applying experiential learning theory to Technical and Vocational Education and Training (TVET) programmes as a learning approach can help trainees establish job-related skills needed in the labour force. Establishing job-related skills is crucial in an economy facing high levels of unemployment (Mayombe, 2024). Another study by Schreck et al. (2022) applied experiential learning in recreation studies and used reflective journals to document student growth. Although students showed increased engagement, the study lacked a structured framework for evaluating satisfaction, and simulation was absent. Furthermore, McPherson-Geyser et al. (2020) explored experiential learning in the life sciences using a pre- and post-quantitative design. They found that interactive strategies improved concept mastery and reflective thinking. However, the study did not take into account students' satisfaction outcomes. Similar findings were obtained in another study by Thuketana (2020), which focused on community learning projects. The reviewed literature shows that only a few studies have directly modelled the relationship between simulation-based experiential learning and student satisfaction, targeting specifically the field of finance. Studies have also failed to capture how different learning approaches, such as deep and surface learning, affect satisfaction outcomes. The current study addresses these gaps by focusing on student satisfaction as a mediated outcome of deep and surface learning approaches in simulation-based experiential learning from a finance discipline and the South African context.

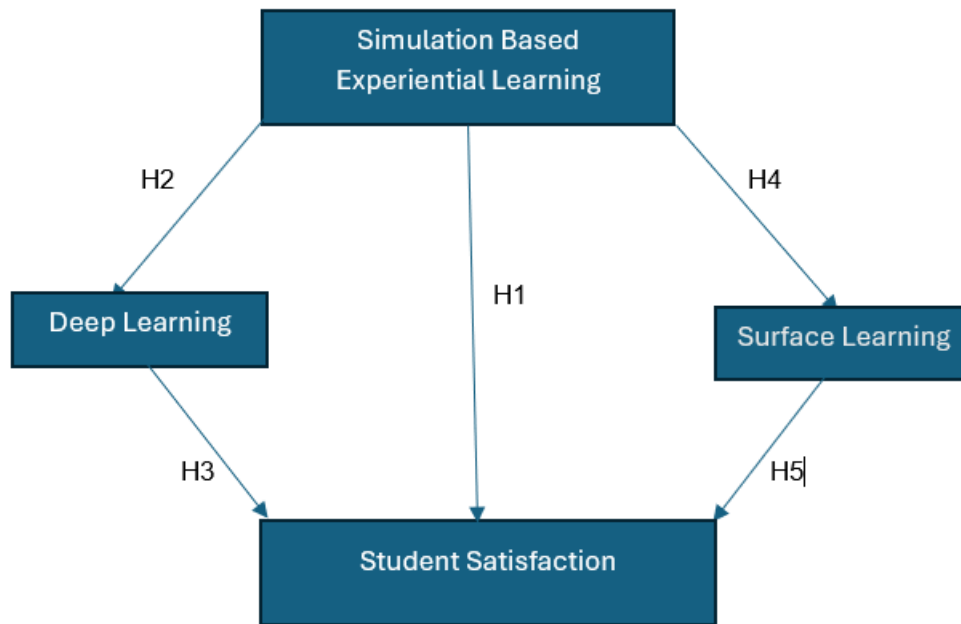
## **METHODOLOGY**

### **Research method**

The study adopted a quantitative cross-sectional research design with data collected at a single point in time following a simulation-based experiential learning intervention. This approach was appropriate given the numerical nature of the study's objective, which was to evaluate the relationship between simulation-based experiential learning and student satisfaction, while taking into account the mediating roles of deep and surface learning. The research design also allowed for the timely measurement of students' experiences following the completion of the SBEL intervention.

### **Research design or model**

Figure 1 below depicts and discusses the empirical model that underpins the study.



**Figure 1: Conceptual Framework** (Seseni et al., 2025)

Figure 1 outlines the presumed relationships among SBEL, learning approaches (deep and surface), and student satisfaction. Figure 1 shows the empirical model with the hypothesised relationship between the variables. In the functional model, simulation-based experiential learning was placed as an exogenous latent variable predicting student satisfaction, with deep and surface learning approaches specified as mediators. The latent constructs in the model were specified as reflective. In the model, simulation-based experiential learning is hypothesised to have a direct positive impact on student satisfaction (H1) as observed by Bakoush (2022). Theory also suggests that different learning styles affect how students respond to experiential methods (Gittings et al., 2020; Randall et al., 2025). Therefore, in line with this theoretical perspective, the study suggests that deep and surface learning mediate the relationship between SBEL and student satisfaction. In this regard, the second hypothesis (H2) suggests that SBEL has a direct positive impact on deep learning, and deep learning, in turn, positively influences student satisfaction (H3), indicating a mediated path through which SBEL impacts student satisfaction with deep learning as the mediator. On the other hand, SBEL is proposed to have a negative impact on surface learning (H4), and surface learning is also found to have a negative impact on student satisfaction (H5), indicating a second mediated path through which SBEL affects student satisfaction. A partial least squares structural equation model (PLS-SEM) was employed to assess the strength of the relationship between the latent constructs. The PLS-SEM was adopted due to its ability to capture multiple constructs and its robustness to non-normal data distributions (Avkiran & Ringle, 2018; Hair, Risher, et al., 2019; Sarstedt et al., 2014). In addition, PLS SEM is also ideal for small to medium-sized samples and allows for testing of direct, indirect and mediating effects at the same time, providing different path coefficients which can be useful for assessing the accuracy of findings (Hair, Risher, et al., 2019; Sarstedt et al., 2014). The PLS SEM analysis proceeded in two stages. Firstly, the measurement model was assessed to confirm the reliability and validity of latent constructs. Secondly, the structural model was evaluated to test the hypothesised relationships. Direct and indirect effects were examined using bootstrapping of 5,000 subsamples, and the computed significance of direct and indirect effects was presented in tabular form. The model fit was assessed through the standardised root mean square residual (SRMR) while the predictive relevance of endogenous constructs was captured through Q2 values.

- **Data collection tools**

Data were collected using a structured questionnaire consisting of 41 closed-ended items with a 5-point Likert scale ranging from Strongly Disagree to Strongly Agree. The questionnaire was adapted from previously validated studies on SBEL and student engagement, specifically Bakoush (2022) and Kageyama et al. (2022), with modifications tailored to the finance education context. Therefore, the questionnaire comprised items that focused on demographic data, simulation-based learning experiences, the deep learning approach, the surface learning approach, and student satisfaction. The questionnaire was hosted electronically on the University's online learning platform and remained open for students to complete from October 21, 2024, to November 20, 2024.

- **Sampling or research group**

The sampling technique was purposive, and the target population comprised undergraduate students enrolled in two finance-related modules, namely Financial Planning 3B and Entrepreneurial Growth Strategies 2B, at a higher education institution in South Africa. Purposive sampling was employed, as the researchers specifically used their own students. These modules were purposively selected due to their practical orientation and suitability for SBEL implementation. As a part of the curriculum and module outcomes, both student groups are required to complete a practical group project. A total of 288 students participated in the simulation, with valid responses obtained from 108 students. In the group, 223 students were third-year Bachelor of Commerce in Finance students, and 65 were second-year students pursuing a Diploma in Small Business Management. If the respondent didn't answer satisfactorily, for instance, if it is a constant value of only 4's (agree) with no variance, these respondents were taken out of the sample.

- **Research procedures**

The experiential learning intervention involved a group-based client simulation project. Students were grouped into teams of 6 to 8 members, drawn from the financial planning and entrepreneurial growth strategies modules. The students were tasked with developing a financial planning report and a business model canvas for a hypothetical client, based on a set of pseudo facts. This process simulated a real-world advisory scenario and was conducted over a five-week period. Feedback sessions were done to simulate real-time client interactions and repeated problem-solving. This helped students to memorise and remember what was taught in the theory classes. Moreover, it helped to make connections between the theory taught and the scenario provided as part of the simulation. This applied to both finance and business students.

- **Validity and reliability measures**

In this study, reliability and validity were tested using Cronbach's alpha. This is highlighted in the table below and the discussion that follows.

**Table 1: Reliability and Validity of Higher Order Constructs**

Construct	Cronbach's alpha	Average Variance Extracted
Deep approach to learning	0.738	0.792
Simulation based learning	0.793	0.706
Student Satisfaction	0.841	0.759
Surface approach to learning	0.618	0.668

Source: Primary Data

Table 1 shows the reliability and convergent validity tests of the higher-order constructs in the model. All the constructs had average variance extracted values above the recommended 0.50 threshold, indicating good convergent validity as according to Fornell and Larcker (1981). Cronbach alpha values for deep approach to learning (0.738), simulation-based learning (0.793), and student satisfaction (0.841) surpassed the acceptable 0.70 level, confirming internal consistency reliability. Surface approach to learning had a Cronbach's alpha of 0.618, which was below 0.70 but is considered acceptable given the exploratory nature of the study (Hair, et al., 2019).

- **Data Analysis**

Preliminary checks for anomalies were conducted using descriptive statistics for individual items to ensure that no anomalies or response patterns existed that could lead to bias in the results. SmartPLS was the software used for PLS-SEM. However, the descriptive summary checks were not included in the final analysis as the study focused on the structural relationships between the variables. The data were then subjected to exploratory factor analysis with promax rotation to examine the underlying factor structure. Items with loadings below 0.4 were excluded from further analysis to enhance construct validity. Data analysis also involved initial checks for the reliability and validity of the questionnaire. Internal consistency was evaluated through Cronbach's alpha, with a threshold alpha score of 0.7 deemed satisfactory (Cronbach, 1951). Convergent validity was checked through average variance extracted values with a targeted value equal to or more than 0.5 in line with Fornell and Larcker (1981), while discriminant validity was assessed through the Fornell-Larcker criterion (1981) and the heterotrait-monotrait ratio with acceptable values below 0.90 (Henseler et al., 2015).

- **Limitations**

In terms of the response rate, only 108 of the 288 students completed the questions. This is less than half of the population group. Although there were enough responses for data analysis, it is possible that more students responding would further enhance the research findings. The period during which the questionnaire was issued

coincided with exam season; in the future, it would be more beneficial to administer the questionnaire immediately after project submission and extend the period of availability. The researchers also acknowledge response bias due to self-reporting on student satisfaction.

## RESULTS

Table 2 below depicts the outer loadings of lower-order constructs, followed by the analysis.

**Table 2: Outer Loadings of Lower Order Constructs**

Item	Concrete experience	Deep motivation	Deep strategies	Feedback support & organization and management	Overall satisfaction	Reflective observation & abstract conceptualisation	Surface motivation	Surface strategy	Teaching and learning	active experimentation
Q100										0.827
Q11										0.812
Q14		0.843								
Q15		0.807								
Q17		0.839								
Q18		0.782								
Q19		0.796								
Q2	0.916									
Q20			0.734							
Q21			0.774							
Q22			0.832							
Q23							0.817			
Q24							0.899			
Q25							0.773			
Q29								0.90		
Q3	0.936									
Q30								0.88		
Q31				0.726						
Q32				0.893						
Q33				0.667						
Q34				0.825						
Q35				0.702						
Q36					0.89					
Q37					0.938					
Q38					0.902					
Q39									0.876	
Q4										0.699
Q41									0.913	
Q42									0.913	
Q43									0.798	
Q5						0.819				
Q6						0.776				
Q7						0.803				
Q8						0.856				
Q9										0.694

Source: Primary Data

Table 2 presents the outer loadings of the retained indicators on their respective latent constructs. A total of 42 items were initially subjected to reduction through exploratory factor analysis. Of these, 35 items exhibited loadings above 0.60 and were retained for further analysis. Seven items (Q1, Q12, Q13, Q26, Q27, Q28, and Q40) were removed as they displayed loadings below the acceptable threshold of 0.40. All retained items exceeded the 0.60 indicator reliability criteria thus supporting their inclusion in the PLS-SEM model.

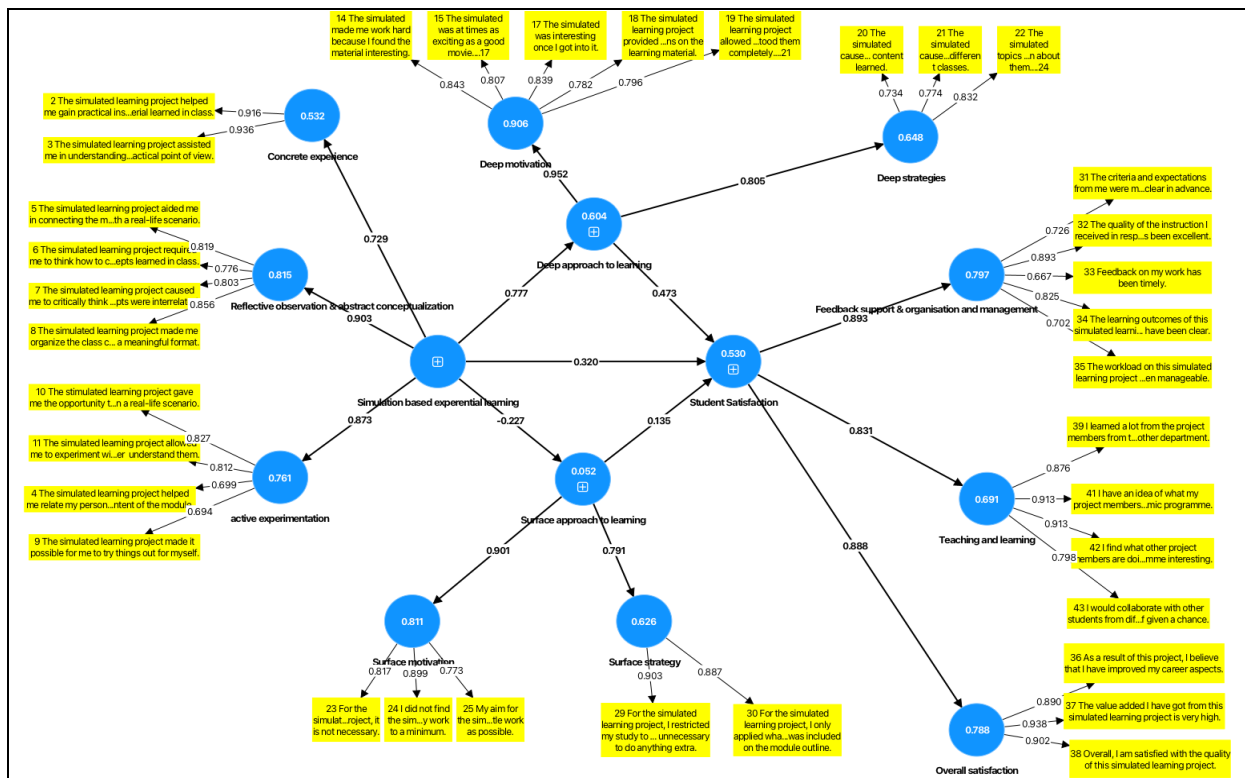
**Table 3: Reliability and Convergent Validity of Lower Order Constructs**

Construct	Cronbach's Alpha	Average Variance Extracted
Overall satisfaction	0.90	0.83
Teaching and learning	0.90	0.77
Deep motivation	0.87	0.66
Concrete experience	0.83	0.86
Reflective observation & abstract conceptualisation	0.83	0.66
Feedback support, organisation and management	0.82	0.59
Surface motivation	0.78	0.69
Active experimentation	0.76	0.58
Surface strategy	0.75	0.80
Deep strategies	0.68	0.61

Source: Primary Data

Table 3 presents the results of reliability and convergent validity tests for the questionnaire constructs. All the constructs except one showed acceptable internal consistency reliability with Cronbach's alpha values exceeding the acceptable threshold level of 0.7. The teaching and learning and overall student satisfaction constructs had Cronbach's alpha values of 0.90, which, according to Cronbach (1951) is a reflection of excellent internal consistency. Similarly, deep motivation (alpha = 0.87), concrete experience (alpha = 0.83), reflective observation (alpha = 0.83), and feedback support (alpha = 0.82) had values above 0.80, which are considered good for internal consistency; the remaining constructs had acceptable levels of consistency within the 0.7 range. Deep strategies fell marginally short of the acceptable range ( $\alpha = 0.68$ ). However, Hair et al. (2019) suggest that in exploratory research, values between 0.60 and 0.70 can be deemed acceptable. For all the constructs, the average variance extracted (AVE) values were above 0.50, indicating satisfactory convergent validity (Fornell & Larcker, 1981). The high convergent validity values suggest that the items making up the constructs strongly represent the underlying latent variables. Significant discrimination was also observed between the constructs using the Fornell-Larcker matrix and HTM values, which were below 0.90, in line with Henseler et al. (2015).

**Figure 2: Lower Order Factor Model with Factor Loadings**



Source: Primary Data

Figure 2 illustrates the lower-order model with factor loadings. The model represents the validated structure of the individual latent constructs after item reduction and reliability and validity tests. The model confirmed that the retained indicators reliably measured their respective subdimensions, with all loadings exceeding the 0.60 mark. The validated model served as the basis for forming and testing the higher-order constructs in the structural model.

**Table 4: Outer Loadings of Higher Order Constructs**

	Deep approach to learning	Simulation based learning	Student Satisfaction	Surface approach to learning
Concrete experience		0.757		
Reflective observation & abstract conceptualization		0.883		
Active experimentation		0.875		
Deep motivation	0.902			
Deep strategies	0.878			
Feedback support, organisation, and management			0.893	
Overall satisfaction			0.913	
Teaching and learning			0.803	
Surface motivation				0.981
Surface strategy				0.611

Source: Primary Data

Table 4 shows the outer loadings of the lower-order constructs on their respective higher-order constructs. After confirming the validity and reliability of the lower-order constructs, related subdimensions were combined into higher-order latent constructs using the hierarchical component model approach. All the loadings had loadings above 0.70. According to Hair et al. (2017) and Sarstedt et al. (2014) outer loadings of components should exceed 0.70 for reliability. Therefore, the observed outer loadings on higher order constructs in excess of 0.70 confirmed reliability at the higher order level. In this context, Simulation-Based Learning was captured through concrete experience (0.757), reflective observation and abstract conceptualisation (0.883) and active experimentation (0.875). In addition, Student Satisfaction was represented by feedback support and organisation and management (0.893), overall satisfaction (0.913), and teaching and learning (0.803). Further, Deep Learning was explained by deep motivation (0.902) and deep strategies (0.878). while surface motivation (0.981) and surface strategy (0.611) represented the Surface Approach to Learning. The findings align with Bakoush's (2022) observations about the multidimensional nature of simulation based experiential learning.

**Table 5: Fornell-Larcker Criterion Matrix of Higher Order Constructs**

	Deep approach to learning	Simulation based learning	Student Satisfaction	Surface approach to learning
Deep approach to learning	<b>0.89</b>			
Simulation based learning	0.774	<b>0.84</b>		
Student Satisfaction	0.687	0.67	<b>0.871</b>	
Surface approach to learning	-0.242	-0.249	-0.09	<b>0.817</b>

Source: Primary Data

Table 5 shows the Discriminant validity tests using the Fornell-Larcker matrix. The Fornell-Larcker criterion says that the diagonal values should be larger than all values in the same row and column (Fornell & Larcker, 1981). This was observed to be true for all the higher-order constructs in Table 5, indicating significant discrimination between the constructs. Tests were also done using the HTMT approach, which showed HTMT values below 0.90, thus confirming satisfactory discrimination between higher-order constructs.

### Structural Model Results

After confirming the reliability and validity of the constructs, the next step involved evaluating the results of the structural model. Prior to the evaluation, multicollinearity checks were done to ensure stable estimates. All the variance inflation factors had values below 3, indicating the absence of multicollinearity between the higher-order construct items. Therefore, the structural model was not affected by multicollinearity, and the estimates produced were stable. The  $R^2$  values of the dependent endogenous constructs were checked to assess the predictive power of the model. Student satisfaction had an  $R^2$  value of 0.53, indicating that the model explained 53% of the variation in student satisfaction, which, according to Hair et al.(2019) is a moderate level of explanatory power. The model also had a slightly higher  $R^2$  value of 0.60 for the deep approach to learning, indicating that it accounted for 60% of the variation in the construct, whereas the surface approach had an  $R^2$  of 0.06. The model, however, exhibited a good fit with a standardised root mean square of 0.08. Hair (2019) notes that SRMR values below 0.10 are considered acceptable in terms of consistently being able to explain the covariance among the indicators. Further, through a blindfolding procedure, the predictive relevance of the model was estimated. According to Hair et al. (2017) Values between 0.02 and 0.14 indicate weak predictive relevance, while values between 0.15 and 0.34 indicate moderate predictive relevance, and values of 0.35 or greater indicate strong predictive relevance. The student satisfaction construct and the deep approach to learning had  $Q^2$  values of 0.433 and 0.576, indicating a strong predictive relevance. On the other hand, the surface approach to learning construct had a  $Q^2$  value of 0.007, suggesting no predictive relevance. The findings suggest that the model offers strong predictive capability for a deep approach to learning and student satisfaction, but fails to adequately predict a surface approach to learning.

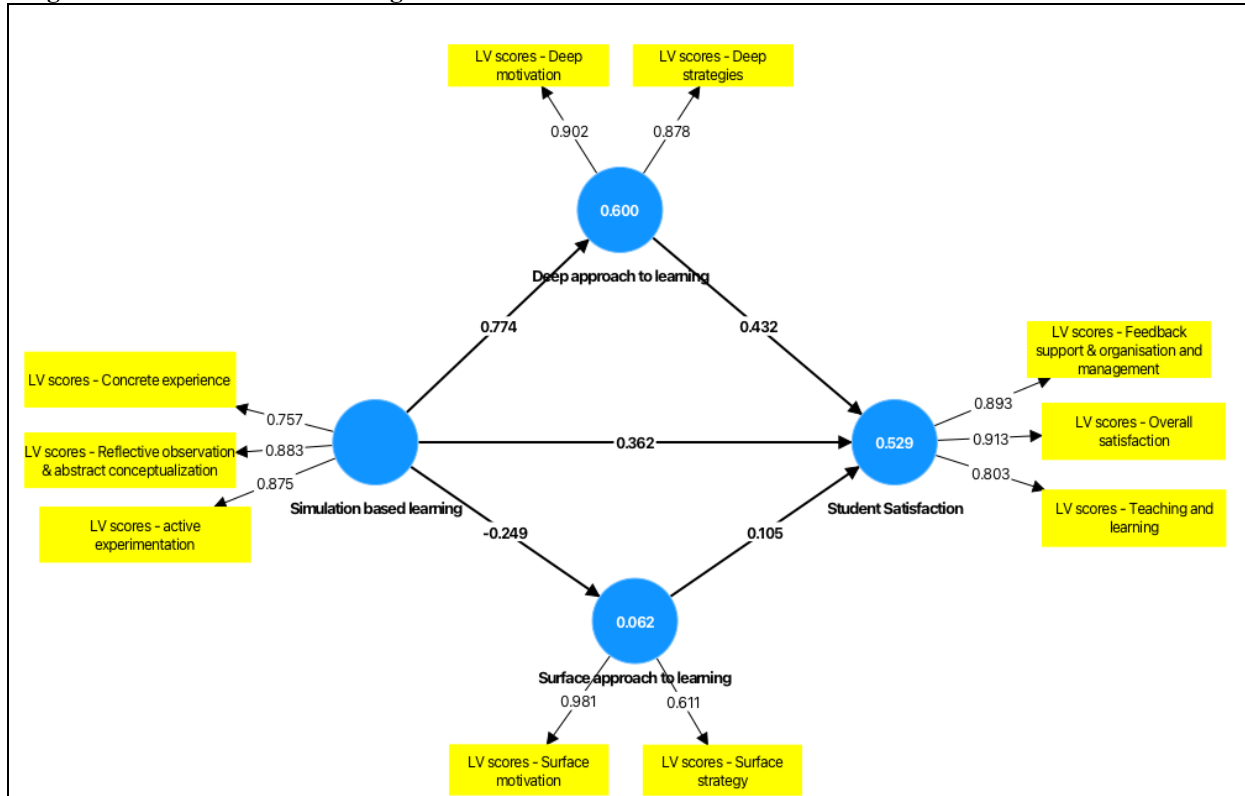
**Table 6: Total and Indirect Effects**

Hypothesis	Relationship	Coefficient
H1	SBEL -> Student Satisfaction	0.362***
H2	SBEL -> Deep Approach to Learning	0.774***
H3	Deep Approach to Learning -> Student Satisfaction	0.432***
H4	SBEL -> Surface Approach to Learning	-0.249
H5	Surface Approach to Learning -> Student Satisfaction	0.105
<b>Total Indirect Effects</b>		
	Simulation based learning -> Student Satisfaction	0.308***
<b>Specific Indirect Effects</b>		
	Simulation based learning -> Deep approach to learning -> Student Satisfaction	0.334***
	Simulation based learning-> Surface approach to learning -> Student Satisfaction	-0.026

Source: Primary Data \*\*\*/\*\*\* denotes significance at 10%, 5%,1% respectively

Table 6 presents the results of the direct and indirect relationships between simulation-based experiential learning, student satisfaction, and the use of deep and surface approaches to learning. The results of Hypothesis 1 indicate that simulation-based experiential learning (SBEL) in finance has a direct, positive, and significant impact on student satisfaction, with a coefficient of 0.362. Therefore, exposing students to experiential real-world scenarios and engaging learning environments directly promoted students' satisfaction. The moderate path coefficient size of 0.362 suggests that student satisfaction may also be dependent on other factors. However, the direct positive impact finding aligns with Bakoush (2022) who also noted that SBEL promotes satisfaction by increasing students' sense of relevance and application. The findings also confirmed Hypothesis 2, which states that SBEL has a direct and positive impact on deep approaches to learning for finance students. The path coefficient of 0.774 between SBEL and deep approaches to learning indicates the immense role SBEL played in enhancing deep learning. The findings suggest that SBEL encouraged students to go beyond surface-level engagement and stimulated motivation, critical thinking and a desire to understand conceptually.

**Figure 3: PLS SEM Model of Higher Order Constructs**



Source: Primary Data

Figure 3 shows the final PLS-SEM model with higher-order constructs. The model depicts the relationships between simulation-based experiential learning, deep and surface learning approaches, and student satisfaction. The SBEL structure is reflected in its subdimensions, showing the mediated pathways through both deep and surface approaches. The diagram also reveals the path coefficients with the strength of each hypothesised relationship reflected through the coefficients.

## DISCUSSION

SBEL changed the way students approached learning and encouraged them to engage more in the learning process. The size of the coefficient may be an indicator of the effectiveness of the simulation design, with well-prepared simulations encouraging greater engagement. This finding confirms Kolb's (1984) experiential learning theory, which posits that meaningful experiences encourage reflection, abstract conceptualisation, and active experimentation. Findings also showed a direct positive and significant relationship between deep approaches to learning and students' satisfaction, with a coefficient of 0.432. Therefore, finance students who engaged more with learning content tended to have greater satisfaction. The findings suggest that student satisfaction may not be solely dependent on the delivery tool, such as SBEL, but also on the student's cognitive engagement in the process. This finding confirms Randall et al.'s (2025) perspective that the learning experience itself, rather than the learning tool, is the driver of student satisfaction.

In terms of hypothesis 4, findings showed no relationship between SBEL and surface learning. This suggests that SBEL, on its own, may not have been sufficient to prevent surface learning tendencies in some students. Therefore, a change in pedagogy may not have been adequate to discourage students from merely completing the minimal task and relying on rote memorisation. According to Sharma et al. (2018), external pressures on grades and time constraints may force students to focus more on surface learning. Findings also showed no significant direct link between surface approaches to learning and student satisfaction. This finding contradicts Sharma et al.'s (2018) finding that some students are satisfied with surface learning outcomes, such as passing an exam, without being concerned about the quality of their learning. The total indirect effect of SBEL on student satisfaction (coefficient = 0.308) represents the combined contribution of mediated paths from deep learning approaches (coefficient = 0.334) and surface learning approaches (coefficient = -0.026). The strong significance of the total indirect effects indicates that SBEL improved satisfaction through the learning approaches, with the deep learning approach being the primary contributor to this improvement. The mediated pathway suggests that SBEL improved finance

students' satisfaction through shifts in how students engaged in terms of reflection, critical thinking and improved conceptualisation. Randall et al. (2025) and Bakoush (2022) agree that there is a mechanism through which greater student satisfaction is attained, and this mechanism involves deeper thinking and a meaningful connection between theory and practice in learning. This finding is supported by the specific indirect effect mediated by the path from SBEL to deep learning, which in turn led to student satisfaction. This mediated indirect path had a positive and significant coefficient of 0.334. This demonstrates that student satisfaction was not only a result of simulation-based experiential learning but also a consequence of the way SBEL encouraged students to think critically, reflect, and apply their knowledge. The second mediated indirect path from SBEL to surface learning and student satisfaction had an insignificant coefficient, indicating that surface learning did not mediate the relationship between SBEL and student satisfaction. This finding supports Gittings et al.'s (2020) argument that student satisfaction is driven more by positive enablers than the negative behaviour of surface engagement.

## CONCLUSION, IMPLICATIONS AND SUGGESTIONS

The study examined the impact of simulation-based experiential learning on the satisfaction of finance students in the context of a higher education institution in South Africa. Deep and surface learning approaches were employed as mediating variables, utilising a partial least squares structural equation model. Firstly, study findings showed that simulation-based experiential learning in finance had a direct positive and significant impact on student satisfaction. Therefore, exposure to experiential real-world scenarios and engaging learning environments directly improves students' satisfaction. Secondly, the study confirmed that SBEL has a direct and positive impact on deep approaches to learning for finance students. In this context, it can be concluded that SBEL encourages students to go beyond surface-level engagement and stimulates motivation, critical thinking, and a desire to understand concepts conceptually. A direct, positive, and significant relationship between deep approaches to learning and finance students' satisfaction confirmed that student satisfaction may not be dependent solely on SBEL, but also on the cognitive engagement of the student in the process. This finding was further supported by the specific indirect effect mediated by the path from SBEL to deep learning, which in turn led to student satisfaction. Therefore, student satisfaction is not only a result of simulation-based experiential learning but also a result of the way SBEL encourages students to think critically, reflect, and apply knowledge. Furthermore, the study found no direct or mediating relationship between SBEL, surface learning approaches, and student satisfaction, suggesting that SBEL on its own may not be sufficient in preventing surface learning tendencies. In light of these findings, several policy and practical recommendations can be proposed. Given the positive direct and indirect effects of SBEL on student satisfaction and deep learning, higher learning institutions should be encouraged to formalise its use across educational programmes. This can be achieved by placing simulation-based learning activities at the core of modules, ensuring that students benefit from exposure to experiential learning opportunities that stimulate critical thinking and conceptual understanding. In addition, the measured impact of SBEL in this study may reflect the quality of simulation design and delivery. Therefore, higher education institutions should invest in training their academic staff to design and implement simulation activities effectively, ensuring that simulations are relevant and aligned with learning outcomes. Further, policymakers and educational experts should ensure that assessments reward critical analysis, reflection, and application of knowledge rather than rote memorisation. This alignment between pedagogy and assessment will enhance deep learning behaviour and discourage focus on surface learning approaches. Lastly, higher education policymakers should prioritise infrastructure and resources that support the use of simulation technologies. This may include investments in simulation software, technical support, and digital platforms that can accommodate large-scale experiential activities, ensuring all students have access to these platforms.

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