# EVALUATION OF ENTREPRENEURIAL BUSINESS SIMULATION ACCEPTANCE AMONG EUROPEAN AFRICAN AND ASIAN STUDENTS

**Syed Muhammad Afraz Hassan Gillani, Universitit Teknologi Malaysia**
**Aslan B. Amat Senin, Universitit Teknologi Malaysia**
**Syed Muhammad Ahmad Hassan Gillani, GC University Faisalabad**
**Hamad Raza, GC University Faisalabad**
**Humara Ahmad, Universitit Teknologi Malaysia**

## ABSTRACT

***Purpose:*** *The purpose of this research is to find out if Business Simulation Games are perceived as an effective teaching tool for entrepreneurial education and to analyze the factors impacting the intention to continue using these games.*
***Design/Methodology/Approach:*** *This study was carried out in three different countries by adopting established models and theories, conducting questionnaires and testing hypothesis. The software used to analyse the outcome were VOS Viewer, SPSS and Smart PLS.*
***Findings:*** *The outcome of the research was that generally, Business Simulation Games are perceived as an effective teaching tool. The continuance intention of using these games depends on several variables such as technological factors, emotional factors, agency factors and learning factors. It is evaluated that Learning Factor has highest importance score while Agency Factor have the lowest performance which predicts that there is a great room of improvement in this area to increase the willingness of students to play entrepreneurial business simulation during their degree program for getting maximum practical knowledge in risk-free environment.*
***Research limitations:*** *The research has several limitations. Firstly, the number of countries and cultures were few and could be expanded to check if the results can be generalized and transferred to other countries. Secondly, the methodology could be expanded to include a survey of teachers and professors to analyze their opinion. Finally, the research model itself could be expanded by adding new variables and models like analyzing how far Business Simulation Games have an impact on the entrepreneurial intention of the students.*
***Originality/value:*** *This research is valuable because it adds new knowledge concerning the factors impacting the intention to use Business Simulation Games. Furthermore, it gives a holistic view of the topic by combining perspectives from developing and developed countries.*

**Keywords:** Business Simulation Game, Expectation Confirmation Theory, Entrepreneurial Education, Asia, Africa, Europe

## INTRODUCTION

According to the Business Dictionary, digitalization is the "Integration of digital technologies into everyday life by the digitization of everything that can be digitized" (Business Dictionary, 2018). Therefore, in these times where digitalization has already integrated into many areas of our lives, it is obvious that traditional teaching methods at universities will not be unaffected. They will have to be rethought if indeed digitalization is going to improve traditional learning. Active learning, like using Business Simulation Games, is not a new method (Oblinger, 2004). Going back in history, Naylor found out that in the 1950s, the first management decision game has been invented aptly named "Top Management Decision Game" (Naylor, 1971). But of course, with the increase of knowledge in management areas and the rapid improvement of

technologies over the last years, the business simulation games in recent times do not compare to the games 60 or 70 years ago (Chiu et al., 2005).

Apart from that, Faria and Wellington found out that about 98% per cent of universities in the United States are using Business Simulation Games in order to teach management skills (Faria & Wellington, 2004). Looking ahead, Vlachopoloulos thinks that Business Simulation Games are an indispensable method in educating managers. This is because they get the chance to link theory and team working without taking the risks that occur in the real world (Vlachopoulos & Makri, 2017).

Knowing all those facts, the question then arises, in which way do business simulation games contribute to the students learning experience? And what are the factors that influence them to use it? These are the questions that will be answered in this research paper. In the beginning, the author is going to give a background on established theories and models, followed by the data analysis of a conducted survey and finally, the recommendations and conclusion. The results of the analysis are based on the answers of students that took part in a management course in developed and developing countries, using the simulation game "Cesim".

## Problem Statement

Traditional teaching methods like theoretical learning do not provide the optimal platform for students to link abstract concepts and real-world problems (Prado et al, 2020). The research aims to find out whether Business Simulation Learning can be an effective tool to assist students in entrepreneurial decision making. The question then arises; what is the traditional method of teaching? It refers to the mode of teaching used back in the day and is regarded to be conventional and basic. It largely entails memorization by rote and recitation. There was minimal student engagement and the learner would remain relatively silent for the duration of the class unless prompted by the teacher to participate. It is grounded in the rationale that because the teacher knows and the learner does not, the learner has no business doing anything other than absorbing the content provided by the teacher (Aguilera-Castillo et al., 2020). The teacher was also responsible for enforcing the standards of behaviour. The student was subjected to periodic tests and assessments to gauge their ability to memorize and replicate what they had learned.

On the other hand, progressive modern teaching methods increase the participation of the student and use methods with a strong formative characteristic (Sirbu et al., 2015). Modern methods of teaching recognize and appreciate the fact that different learners have different learning needs and that they should be handled on an individual basis. Unlike traditional methods of learning that focus on learning by hearing, modern methods focus on learning by discovery and curiosity. They are not rigid but are flexible and relaxed, allowing co-operation between learners and teachers (Hallinger & Wang, 2020). While traditional methods seek to drill content into learners, modern methods are more interested in creating inner motivation within the learner.

Some of the different modern approaches to teaching are demonstrating, collaborating, questioning, modelling and explaining. Demonstrating means to offer a new perspective to the learner. Collaboration is where learners work together in teams which facilitate peer to peer learning. Questioning is a method of testing by the teacher to measure how much the learner has absorbed and retained. Modelling is using visual aids to support the learning process. Explaining is giving a talk or discourse on a specific topic with the aim of transferring understanding to the listener (Morin, 2020).

Zulfiqar, et al., (2019) explains that the business simulation games increase the student understanding about the different aspects of business and also increase their intention to start their business in Pakistan and China. Business simulation games incorporate elements of cooperation, modelling, and demonstration. They combine game elements within simulation programs to put the learner into a scenario they might find themselves in in real life. (Aguilera-Castillo et al., 2020) Simulations have a large array of benefits. They equip learners with key

decision-making skills, they provide learners with a preview of what happens in real-life practice, it engages the students more and keeps them more interested and absorbed in the exercise thereby increasing comprehension and retention. There is also an element of building cooperation and synergy among learner groups and teams (Hallinger & Wang, 2020).

The efficiency of business simulation games depends largely on the different variables that are at play. The learner will desire to use the simulation if they perceive that it will add value to their lives. Moreover, if the learner believes the simulation to be easy enough to use, then they will desire to use and re-use it again. In the same vein, if the learner believes that there will be an adequate reward at the end for their troubles, they will be more invested in the simulation game (Morin et al., 2020). This paper seeks to understand how Business Simulation games can augment and integrate into mainstream learning. We also seek to find out what factors influence the learners desire to use the simulation again, and which variables and theories are attached to these factors.

## Research Question

**Q1:** Are Business Simulation Games perceived as an effective teaching tool for entrepreneurial education?
**Q2:** What are the relevant variables and theories that have an impact on the intention, to reuse Business Simulation Games?
**Q3:** To what extent do the independent variables of the proposed Models influence the intention to continue using Business Simulation Games?

## Research Objectives

**Objective 1:** To explore if the simulation helped students understand and integrate previous business course concepts in ways that enable them to apply the concepts in the future.
**Objective 2:** To analyze the relationship between the different factors impacting the intention to continue using Business simulation games
**Objective 3:** To measure how much the different variables influence the intention to continue

# LITERATURE REVIEW

VOSviewer is the software used to get the first insight into the topic of Business Simulation learning. According to the Nees Jan van Eck & Ludo Waltman, who is the developer of the software, it can be used to create maps based on network data and for visualizing and exploring these maps (van Eck & Waltman, 2018). The main database which is used by the software for analyzing existing journals is called Web of Science. During the period of the research, the databases were extended by e.g. Springer Link and Search Engines like Google Scholar. The following picture gives a first impression of the software:

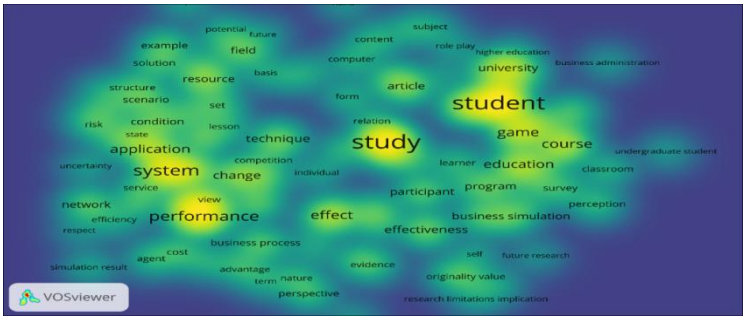


**FIGURE 1**
**DENSITY VISUALIZATION**

The research within the database can be conducted by different parameters like searching for a general topic, a particular title or a specific author. Moreover, the publishing year of the journal can be limited to a certain period. The author used keyword "Business Simulation Learning" and limited the period for the last 18 years, so in the result, no journals published earlier than in 2000 were considered. The first result was the following:

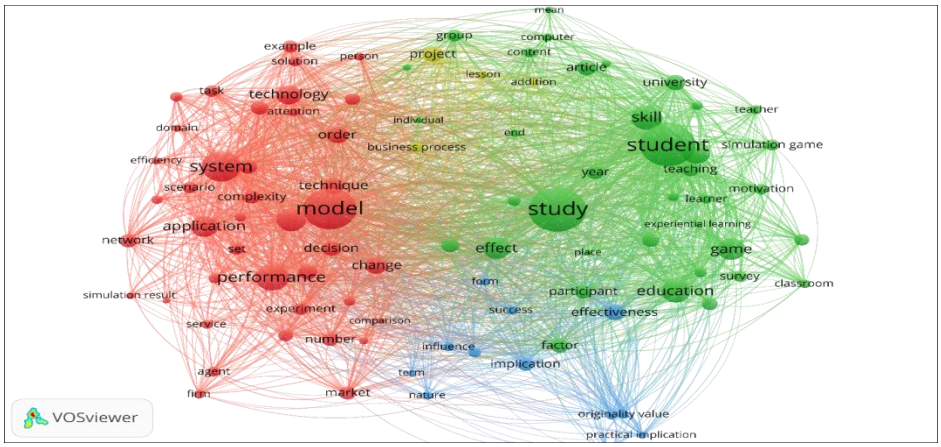


**FIGURE 2**
**NETWORK VISUALIZATION**

Figure No. 2 shows the first outcome of the network visualization of VOSviewer. All in all, there were 364 journals found on the web of science, related to Business Simulation Learning. The circles in the Figure represent a term from the title and abstracts for a given topic of the publications in the data set. The terms are located based on the co-occurrences in the titles and abstracts. The higher the number of co-occurrence of two terms, the closer they are located on the map (van Eck & Waltman, 2018) The colours of the terms represent different categories related to a topic e.g. the red terms like "model", "technology", "simulation result", which could be summarized as technological science. The green labelled circles e.g. "study", "education", "university" can be summarized as education science. Furthermore, the blue labelled terms e.g. "success", "influence", "originality value" can be put into the category of personality science. The last category covered by the terms “Project”, “Business Process” can be generalized as Project Science. The table also shows how the different terms are linked with each other. The number of links between two terms indicates the number of publications, in which they occur together. (van Eck & Waltman, 2018) After having explored the general map in a more detailed way, by zooming closer into the different categories, the result was the following:

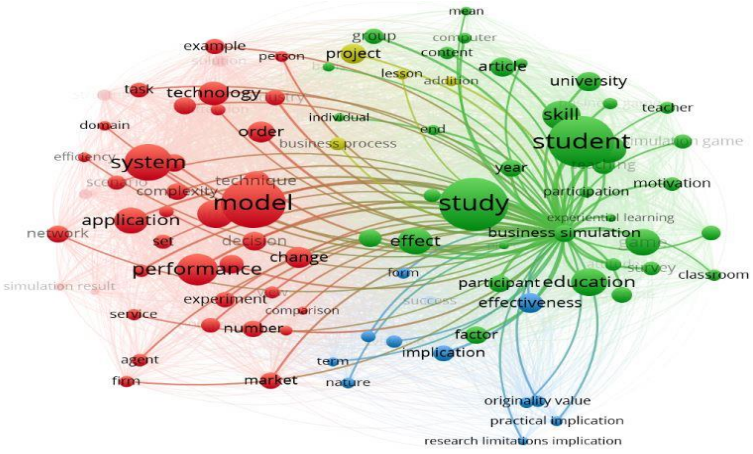


**FIGURE 3**
**NETWORK VISUALIZATION FOCUSES ON BUSINESS SIMULATION**

The outcome of the deeper analysis shows, that there are many existing journals on the database Web of Science related to Business Simulation Learning, using the terms "study", "student" and "model". This leads the author to go for further research on these keywords to discover the gap that still needs to be filled in the existing literature. The outcome of the whole research process is, that there is already existing literature on Business Simulation Learning and its impacting factors, but only for the very small size of the target group, which will be expanded by the following work. To understand the research model, in the following different models and theories will be explained.

## Technology Acceptance Model (TAM)

This is a theory developed by Davis, Bagozzi & Warshaw (1989), as an offshoot of the Theory of Reasoned Action by Fishbein & Ajzen (1975). TAM tries to measure to what extent a person will accept the new information technology presented to them. It can be used to eplain how willing a person is to adopt new technology, as well as exploring different factors that can impact the user's acceptance. Two variables form the backbone of TAM. The first is perceived usefulness (PU). This is how useful the user believes the new technology will be, and what kind of benefits will accrue to them if they adopt the technology. The second variable is the perceived ease of use (PEU). This is how easy the user believes the technology will be to use. The harder it is to use the less likely it is that the user will adopt the technology. In the research, TAM is an independent variable. It has a positive correlation with the dependent variable. It also has a significant impact on the dependent variable (Zulfiqar et al., 2019).

## Constructivism Theory

This is a theory that was created by Jean Piaget. It states that teaching activities should be designed for teach Merrill (1991). The teacher is responsible for creating an ideal environment for learning. Shen (2008) posited that simulation games require environments that allow the learner to put what they have learned into practice. There are 3 variables that underpin this theory. The first is learning performance. This indicates how well the student can learn. The better the student can learn, the better the learning environment is. The second is the classroom climate. A better classroom climate is indicative of a better-constructed learning environment. The Constructivism theory is an independent variable that has a positive correlation with the dependent variable. It also has a significant impact on the dependent variable.

## Motivational Theory

Motivation is why people do things. It is indispensable when it comes to impacting learning performances. This can further be divided into three, the theories of behaviour, humanism, and cognition. The motivation theory of behaviour states that learning is the source of motivation. The humanism theory of behaviour suggests that the teacher's roll over and above instilling knowledge is creating an adequate learning environment. Finally, the cognition principle says that behaviour is controlled by instincts, incentives as well as our beliefs, our thoughts and our expectations. The motivational theory is based on two variables. The first is perceived attractiveness. This indicates how attractive and appealing the learning experience is to the learner. Higher attractiveness would mean higher motivation. The second is perceived playfulness indicates how fun and easy it will be to play the simulation game. The better the game is perceived to be, the more motivation it is to play. The Motivational theory is an independent variable that has a positive correlation with the dependent variable. It also has a significant impact on the dependent variable.

## Agency Theory (AT)

This theory was developed between 1960 and 1970 when economists linked human relationships with risk-sharing. Jensen & Meckling (1979) applied this idea to create AT. They describe agency as the relationship between a principal and an agent based on a contract.

It is based on 3 variables. The first is incentives. This refers to the incentive the principal gives the agent to keep them working in their best interest. The second is goal conflicts (Moon & Kim, 2001). This comes about when the aims of the agent tend towards self-gain rather than having the principal's best interests at heart. This is handled through achieving goal congruence. The last variable is risk aversion. The risk appetites for the agent and the principle might differ, and this might create a difference in the opinion of which action is best (Tao, Cheng & Sun, 2009). The Agency theory is an independent variable that has a positive correlation with the dependent variable. It also has a significant impact on the dependent variable.

## Expectation Confirmation Theory (ECT)

This is a theory developed by R.L Oliver in 1980 to be used in the field of marketing. The theory states that the initial tendency to purchase a commodity will affect the consumer's behaviour to purchase it next time Oliver (1980)8. A higher level of satisfaction will translate into a greater willingness to purchase the product in future. This theory is underpinned by 3 variables. The first is the confirmation level. This indicates how close the experience was as compared to the user's expectation. The second is the satisfaction level. This refers to how much satisfaction the buyer derived from the purchase. The third is the continuance intention. This is the extent to which the buyer intends to buy the product again. The higher the intention the more likely the buyer will make a repeat purchase. In the research, ECT is our dependent variable and it is influenced by the other 4 theories.

## Theoretical Framework

In this research, 5 theories of note were used. 4 theories were independent variables, with one being the dependent variable.

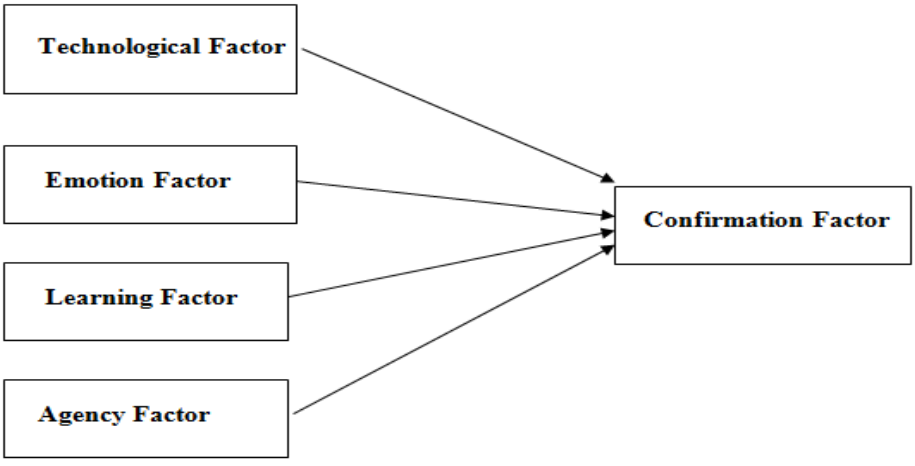


**FIGURE 4**
**CONCEPTUAL MODEL FOR CONTINUANCE USE OF ENTREPRENEURIAL BUSINESS SIMULATION**

## Hypotheses

*$H_1$: TF has a positive relationship and has a significant impact on CF.*
*$H_2$: EF has a positive relationship and has a significant impact on CF.*

*$H_3$: LF has a positive relationship and has a significant impact on CF.*
*$H_4$: AF has a positive relationship and has a significant impact on CF.*

## METHODOLOGY

The purpose of the study is hypothesis testing. We are interested in examining the relationship between different variables and theories with Business Simulation Learning. The unit of analysis is students from 3 universities around the world. We collected data from 103 students from Hochschule Bonn Rhein-Sieg in Germany, University of Nairobi in Kenya and GCUF University in Pakistan.

Our investigation was correlational. We sought to find out what factors influence a user to want to use and reuse a Business Simulation Learning module. We also wanted to establish whether a relationship existed or not between modern learning methods and Business Simulation Learning. Our sample n=103. We used a non-probability sampling method to create our sample. We collected data from students who participated in our business simulation game. The students who took part in the game belonged to classes that were not picked at random.

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The research was cross-sectional. The questionnaire was only administered once per university and after that, there were no further interactions between the researcher and the subjects. We, therefore, viewed all the 103 students as a representative sample. We used an online questionnaire to collect data from the students. The questionnaire had a few nominal scales, but the overwhelming majority of the questions used an interval scale. The results of the questionnaire were then compiled and analyzed using SPSS. The reliability test needs to be done to check two important things: Firstly, to check if the questions of the survey are understood by the audience and secondly to see if the items of the questionnaire measure, what they should measure. In this work, multiple questions Likert scale was used. A ratio to check the reliability of a Likert scale is called “Cronbach’s Alpha”. Cronbach’s alpha is one way of measuring the strength of the consistency of the survey (Cronbach, 1951). The closer the result is to 1, the higher is the degree of covariance of the items. A high value for Cronbach's alpha means, that the items used, probably fit well to analyze a given topic. A score of more than 0.7 days, that the questions are understandable and can be used to analyze the topic. A value below 0.7, is going to be rejected. In the following table, the Cronbach's Alpha for the following five variables was calculated: Technological Factor, Emotion Factor, Learning Factor, Agency Factor. The result is the following:

**Table 1**
**ANALYSIS OF CRONBACH’S ALPHA**

| Variables | Cronbach's Alpha |
|---|---|
| Technological Factor | 0.947 |
| Emotion Factor | 0.939 |
| Learning Factor | 0.938 |
| Agency Factor | 0.945 |
| Confirmation Factor | 0.933 |

The result of the calculation shows that all values of Cronbach’s Alpha are above > 0.9, which indicates that items of the questionnaire are understandable and well-fitting to analyze the relationship between these variables.

## Data Collection

The sample size was 103 respondents. Only one respondent was below the age of 17. 14 were between 18-20 while 65 were aged between 21 and 23. The remaining 23 were aged 24-26. 61% were male while 39% were female. We collected data exclusively from 3 universities, Hochschule Bonn Rhein-Sieg in Germany, University of Nairobi in Kenya and GCUF University in Pakistan.

**Table 2**
**AGE GROUP OF ALL RESPONDENTS**

| Age | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Valid<17 | 1 | 1 | 1 | 1 |
| 18-20 | 14 | 13.6 | 13.6 | 14.6 |
| 21-23 | 65 | 63.1 | 63.1 | 77.7 |
| 24-26 | 23 | 22.3 | 22.3 | 100 |
| Total | 103 | 100 | 100 | |

**Table 3**
**GENDER OF ALL RESPONDENTS**

| Gender | Frequency | Per cent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Valid Male | 61 | 59.2 | 59.2 | 59.2 |
| Female | 42 | 40.8 | 40.8 | 100 |
| Total | 103 | 100 | 100 | |

**Table 4**
**RESPONDENTS FROM DIFFERENT UNIVERSITIES**

| Name of the University | Frequency | Per cent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| H-BRS (Germany) | 17 | 16.5 | 16.5 | 16.5 |
| UoN (Kenya) | 53 | 51.5 | 51.5 | 68 |
| GCUF (Pakistan) | 33 | 32 | 32 | 100 |
| Total | 103 | 100 | 100 | |

# RESULTS AND DISCUSSION

## Descriptive Analysis

To get an overview of the whole scale, descriptive statistics is a useful tool. The results of the questionnaire are summed up in the following table:

**Table 5**
**ANALYSIS OF DESCRIPTIVE STATISTICS**

| Descriptive Statistics | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Technological Factor | | | | 3.128 | 0.8863 |
| Emotion Factor | | | | 3.23 | 0.9483 |
| Learning Factor | 103 | 1 | 5 | 3.412 | 0.7878 |
| Agency Factor | | | | 3.102 | 0.8104 |
| Confirmation Factor | | | | 3.023 | 1.0794 |
| Valid N (listwise) | | | | | |

In the first column of the table, you can see the variables:

- Technological Factor
- Emotion Factor
- Learning Factor
- Agency Factor
- Confirmation Factor

N describes the number of students that took part in the questionnaire. Furthermore, a Likert scale was used from 1 (Strongly Agree) up to 5 (Strongly Disagree). The mean for every variable is 3 or higher, which means that the students mostly agreed with the statements and questions which have been given. The standard derivation by how much the members of a group differs from the mean value for the group.

## Measurement Model

Ringle & Sarstedt (2016) explain most of the recent used Partial Least Square (PLS) method Structure Equation Modelling (SEM). This study also used PLS-SEM for data analysis. Joe F Hair, Ringle & Sarstedt (2011) state that while using SEM the measurement model was evaluated by testing Internal Consistency Reliability (ICR), Convergent Validity (CV), and Discriminant Validity (DV). Internal Consistency Reliability (ICR) is a way to gauge how well a test or survey is measuring what we want to measure. It is also called the degree to which the item measures the latent variables (Farooq, 2018; Hair et al, 2011). Composite Reliability is used to measure the internal consistency reliability (Ringle & Sarstedt, 2016). The values of CR having greater than 0.70 shows that all variables are reliable (Joseph, 2019).

The results of composite reliability shows in table number 6 that Technology Factor (TF) (0.899), Emotion Factor (EF) (0.927), Learning Factor (LF) (0.922), Agency Factor (AF) (0.849) and Confirmation Factor (CF) (0.965) measurements hold high internal consistency reliability.

As presented in Table number 6, the results of the second run indicated that all constructs have achieved a satisfactory level of AVE, Technology Factor (TF) (0.641), Emotion Factor (EF) (0.68), Learning Factor (LF) (0.598), Agency Factor (AF) (0.532) and Confirmation Factor (CF) (0.823) measurements thereby confirming the CV. Although other items of Learning Factors (V3_Learning_LM_2 0.636) have factor loadings less than the standard criterion (0.708), all items were maintained as other items of the same construct have achieved desired AVE scores (0.5) (Avkiran, 2017; Hair et al., 2017).

**Table 6**
**REALIBILITY AND VALIDITY**

| | | Factor Loading | AVE | Cronbach Alpha | Composite Reliability |
|---|---|---|---|---|---|
| Technology Factor | TF | | 0.641 | 0.861 | 0.899 |
| | V1_Techno_PE_1 | 0.746 | | | |
| | V1_Techno_PE_2 | 0.796 | | | |
| | V1_Techno_PE_3 | 0.821 | | | |
| | V1_Techno_PU_2 | 0.797 | | | |
| | V1_Techno_PU_3 | 0.841 | | | |
| Emotion Factor | EF | | 0.68 | 0.905 | 0.927 |
| | V2_Emotion_PA_1 | 0.845 | | | |
| | V2_Emotion_PA_2 | 0.74 | | | |
| | V2_Emotion_PA_3 | 0.892 | | | |
| | V2_Emotion_PP_1 | 0.765 | | | |

| | | | | | |
|---|---|---|---|---|---|
| | V2_Emotion_PP_2 | 0.862 | | | |
| | V2_Emotion_PP_3 | 0.832 | | | |
| Learning Factor | LF | | 0.598 | 0.903 | 0.922 |
| | V3_Learning_CC_1 | 0.737 | | | |
| | V3_Learning_CC_2 | 0.771 | | | |
| | V3_Learning_CC_3 | 0.825 | | | |
| | V3_Learning_CC_4 | 0.715 | | | |
| | V3_Learning_LM_2 | 0.636 | | | |
| | V3_Learning_LM_3 | 0.829 | | | |
| | V3_Learning_LP_1 | 0.84 | | | |
| | V3_Learning_LP_2 | 0.813 | | | |
| Agency Factor | AF | | 0.532 | 0.788 | 0.849 |
| | V4_Agency_IN_1 | 0.794 | | | |
| | V4_Agency_IN_2 | 0.824 | | | |
| | V4_Agency_RA_1 | 0.713 | | | |
| | V4_Agency_RA_2 | 0.666 | | | |
| | V4_Agency_RA_3 | 0.631 | | | |
| Confirmation Factor | CF | | 0.823 | 0.957 | 0.965 |
| | V5_Conf_CI_1 | 0.93 | | | |
| | V5_Conf_CI_2 | 0.919 | | | |
| | V5_Conf_CI_3 | 0.914 | | | |
| | V5_Conf_CL_1 | 0.877 | | | |
| | V5_Conf_CL_2 | 0.911 | | | |
| | V5_Conf_SL_1 | 0.891 | | | |

## Discriminant Validity

Fornell Larcker Criterion

**Table 7**
**FORNELL LARCKER CRITERION**

| | CF | EF | AF | LF | TF |
|---|---|---|---|---|---|
| Confirmation Factor | 0.907 | | | | |
| Emotion Factor | 0.854 | 0.824 | | | |
| Agency Factor | 0.71 | 0.631 | 0.73 | | |
| Learning Factor | 0.845 | 0.807 | 0.639 | 0.774 | |
| Technology Factor | 0.76 | 0.773 | 0.528 | 0.758 | 0.801 |

Another test for the discriminant validity of measurement models was performed by evaluating all cross-loading values of constructs' indicators. As a rule of thumb, indicators of measurement models should have the highest loading on their underlying latent construct, as compared to other constructs involved in the structural model (Farooq et al., 2017; Hair et al., 2017). Complete list of cross loading values of all indicators involved in the constructs of reflective measurement models is presented in Table 8. As per the findings presented in Table 7 all indicators (measurement scale items).

**Table 8**
**CROSS LOADING**

| Cross Loadings | | | | | |
|---|---|---|---|---|---|
| | **TF** | **EF** | **LF** | **AF** | **CF** |
| V1_Techno_PE_1 | 0.746 | 0.534 | 0.527 | 0.364 | 0.454 |
| V1_Techno_PE_2 | 0.796 | 0.506 | 0.584 | 0.444 | 0.531 |
| V1_Techno_PE_3 | 0.821 | 0.668 | 0.65 | 0.495 | 0.668 |
| V1_Techno_PU_2 | 0.797 | 0.689 | 0.615 | 0.384 | 0.659 |
| V1_Techno_PU_3 | 0.841 | 0.66 | 0.638 | 0.42 | 0.678 |
| V2_Emotion_PA_1 | 0.646 | 0.845 | 0.61 | 0.527 | 0.661 |
| V2_Emotion_PA_2 | 0.513 | 0.74 | 0.57 | 0.489 | 0.588 |
| V2_Emotion_PA_3 | 0.734 | 0.892 | 0.728 | 0.588 | 0.795 |
| V2_Emotion_PP_1 | 0.527 | 0.765 | 0.579 | 0.442 | 0.669 |
| V2_Emotion_PP_2 | 0.696 | 0.862 | 0.751 | 0.491 | 0.747 |
| V2_Emotion_PP_3 | 0.677 | 0.832 | 0.729 | 0.577 | 0.74 |
| V3_Learning_CC_1 | 0.504 | 0.555 | 0.737 | 0.552 | 0.549 |
| V3_Learning_CC_2 | 0.55 | 0.57 | 0.771 | 0.436 | 0.59 |
| V3_Learning_CC_3 | 0.553 | 0.605 | 0.825 | 0.491 | 0.646 |
| V3_Learning_CC_4 | 0.414 | 0.525 | 0.715 | 0.433 | 0.564 |
| V3_Learning_LM_2 | 0.445 | 0.497 | 0.636 | 0.36 | 0.559 |
| V3_Learning_LM_3 | 0.659 | 0.697 | 0.829 | 0.499 | 0.714 |
| V3_Learning_LP_1 | 0.699 | 0.735 | 0.84 | 0.555 | 0.781 |
| V3_Learning_LP_2 | 0.771 | 0.743 | 0.813 | 0.596 | 0.757 |
| V4_Agency_IN_1 | 0.565 | 0.547 | 0.585 | 0.794 | 0.641 |
| V4_Agency_IN_2 | 0.613 | 0.625 | 0.68 | 0.824 | 0.654 |
| V4_Agency_RA_1 | 0.228 | 0.353 | 0.309 | 0.713 | 0.426 |
| V4_Agency_RA_2 | 0.119 | 0.294 | 0.289 | 0.666 | 0.365 |
| V4_Agency_RA_3 | 0.178 | 0.373 | 0.307 | 0.631 | 0.395 |
| V5_Conf_CI_1 | 0.681 | 0.8 | 0.823 | 0.69 | 0.93 |
| V5_Conf_CI_2 | 0.682 | 0.806 | 0.787 | 0.616 | 0.919 |
| V5_Conf_CI_3 | 0.747 | 0.771 | 0.754 | 0.659 | 0.914 |
| V5_Conf_CL_1 | 0.685 | 0.754 | 0.728 | 0.593 | 0.877 |
| V5_Conf_CL_2 | 0.725 | 0.775 | 0.756 | 0.692 | 0.911 |
| V5_Conf_SL_1 | 0.617 | 0.741 | 0.745 | 0.61 | 0.891 |

**Note:** Bold values are loadings for items, which are above the recommended value of 0.5.

## Structure Model

The structural model was assessed for the overall explanatory power of constructs through R square value, predictive relevance through Q square value and path coefficient β-values. Findings of the structural model are presented in Figure 2.

These results indicate that the proposed model has 52.1% of explanatory power for confirmation factor with $R^2$=0.827. Moreover, it is found that the relationship between Technology Factor (TF) and Confirmation Factor (CF) (t-value=1.682; β=0.121; p=.046) is positive and significant, providing support for H1. Similarly, H2 which is relationship between Emotion Factor (EF and Confirmation Factor (CF) (t-value= 3.968; β=0.371; p=.000) is also supported. Likewise, proposed relation between Learning Factor (LF) and Confirmation Factor (CF) (t-value=4.055; β=0.322; p=.000) is also significant, thus H3 is supported. Lastly, a

relationship of (t-value=3.285; β=0.207; p=.001) between Agency Factor (AF) and Confirmation Factor (CF) provides support for H4.

**Table 9**
**MEARSUREMENT MODEL**

| Hypothesized Path | Original Sample (O) | Mean (M) | SD | T Statistics (\|O/STDEV\|) | P Values | Decision |
|---|---|---|---|---|---|---|
| Technology Factor -> Confirmation Factor | 0.121 | 0.122 | 0.072 | 1.682 | 0.046 | Supported |
| Emotion Factor -> Confirmation Factor | 0.371 | 0.371 | 0.093 | 3.968 | 0 | Supported |
| Learning Factor -> Confirmation Factor | 0.322 | 0.318 | 0.079 | 4.055 | 0 | Supported |
| Agency Factor -> Confirmation Factor | 0.207 | 0.211 | 0.063 | 3.285 | 0.001 | Supported |

As depicted in Figure 2 $R^2$ value of our structural model is 0.827; which indicates that the proposed conceptual model has adequate explanatory significance. Here caution must be taken because supporting a model only on the base of $R^2$ value is not a good approach (Hair et al., 2017; Radovic-Markovic et al., 2017). Therefore, Stone-Geisser's (1974) Q2 test was used for assessing the predictive relevance of the structural model. As a rule of thumb, if a Q2 value is larger than zero, it suggests that latent exogenous constructs involved in the structural model possess predictive relevance for latent endogenous constructs (Chin, 2010; Hair et al., 2017). The Q2 value of our model is 0.629; which supports the underlying assumption of this study, that the endogenous construct (*i.e.*, Confirmation Factor) involved in this study have strong predictive relevance. Moreover, every construct was assessed for possible collinearity issue. Findings revealed that collinearity is not an issue for our study. Hence, overall predictive relevance for our proposed structural model is achieved.

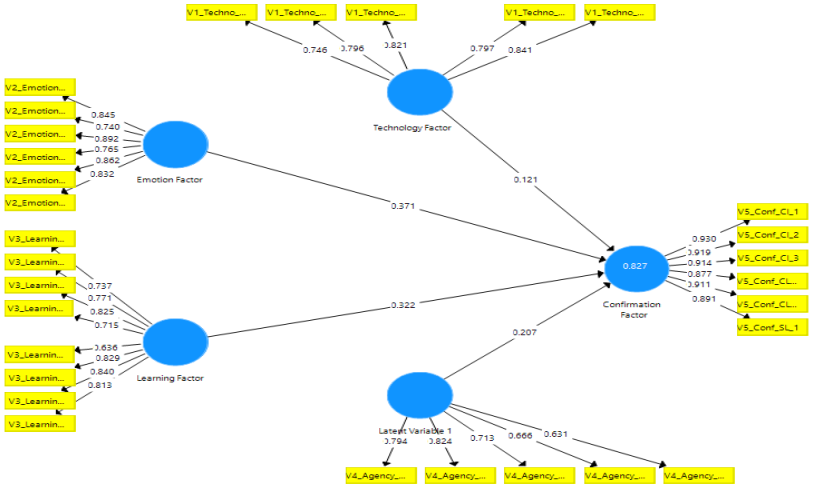


**FIGURE 6**
**MEASUREMENT MODEL**

## IPMA (Importance Performance Map Analysis)

According to Ringle & Sarstedt (2016) explain PLS-SEM provides a very effective analysis tool which is Importance-Performance Map Analysis (IPMA) also known as Priority Map Analysis (PMA) or Matrix Analysis (MA) it gives a very clear and self-explanatory graphical representation of the standard path coefficient estimation (Ringle & Sarstedt, 2016; Wang, 2020). The main objective of the IPMA is to determine the predecessors having relatively low performance but more importantly for the dependent variable which means if one unit will increase in the performance of the independent variable will increase the performance of the

dependent variable by the total importance (*i.e.*, effect size) of the same independent variable. Consequently, Importance of Performance Map Analysis (IPMA) explains the contrast of importance and performance (Farooq et al., 2018).

In this study, Confirmation Factor is a target construct, which is predicted by five predecessors (technology factor, emotion factor, learning factor and agency factor); we executed the IPMA on collected data and the results of IPMA are presented in table number 10 and graphically shown in figure 7.

For a better understanding of the readers, values of all importance and performance are listed in tables and through clear graphical representation, on the top right side of the graph, it is depicted that "learning factor" has highest importance score (0.439) which means if learning factor of a student's performance increase by one unit point then the conformational factor to use the entrepreneurial business simulation will increase by 0.439 points. While looking on the performance side, it is mentioned that Agency Factor have the lowest performance which predicts that there is a great room of improvement in this area to increase the willingness of students to play entrepreneurial business simulation during their degree program for getting maximum practical knowledge in risk-free (Chiu et al., 2005; Ringle & Sarstedt, 2016; Tao et al., 2009).

**Table 10**
**VALUES OF IPMA ANALYSIS**

| Latent Variables | Importance | Performance |
|---|---|---|
| Technology Factor | 0.145 | 55.805 |
| Emotion Factor | 0.417 | 55.914 |
| Learning Factor | 0.439 | 60.803 |
| Agency Factor | 0.293 | 50.507 |

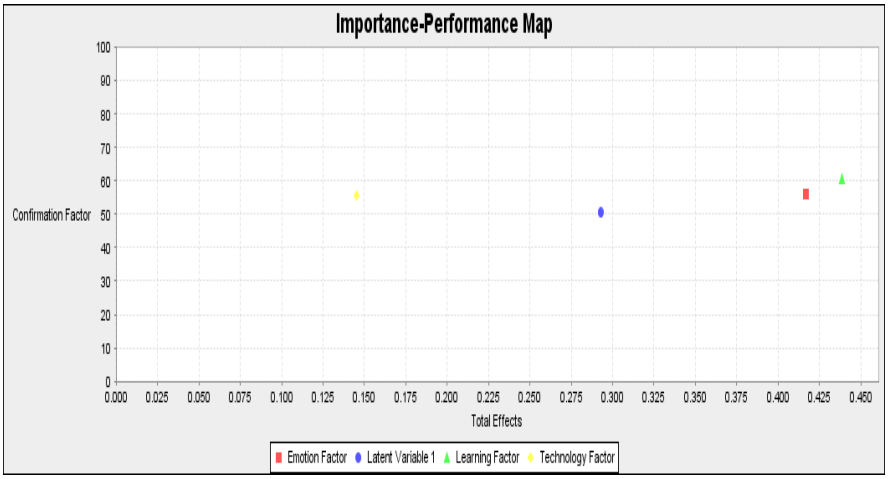


**FIGURE 7**
**IPMA ANALYSIS**

## CONCLUSION & RECOMMENDATION

In the following, the results of the whole research will be discussed. The research questions will be used as a guideline to check the outcome. The first research questions refer to the general acceptance of Business Simulations Games, which is the following: "Are Business Simulation Games perceived as an effective teaching tool for entrepreneurial education?" To answer this question, the author of the research paper refers to two questions in the survey. The first one is "I feel that the contents of the business simulation games are practical and are worth the effort to learn it?" Concerning the Likert scale, the mean of the answer to this question is 3, 5. A mean of 3, 5 shows, that most of the respondents rather agree with this statement. The

second statement referring to answer the research question was “I believe that I can use all the concepts taught, during my studies in a class which uses the business simulation games." The mean of the answer to this statement is 3, 24, which also indicates that the students, all in all, do rather agree with the statement. After having analyzed these questions, the answer to the research question is, that Business Simulation Games are perceived as an effective tool to teach students., which was also found out by Randel. (Randel, 1992).

Now coming to the second research question which is the following "What are the relevant variables and theories that have an impact on the intention, to re-use Business Simulation Games?" During this research, some theories were explained, and several variables have been analyzed. Concerning the correlation analysis and the result of the hypothesis, it was shown that all variables (Technological Factor, Emotion Factor, Motivational Factor, Agency Factor and the Confirmation Factor) have a high correlation with each other, a positive relationship and a significant impact on the intention to re-use the Business Simulation Game (Bhattacherjee, 2001). The last question refers to the variables themselves, trying to find out "To what extent do the independent variables of the proposed Models influence the intention to continue using Business Simulation Games?" In the regression analysis part was conducted to answer that question. The Beta value of the analysis is a value which measures the impact of the dependent variables on the independent variables. From the result can be derived that in this research, the Technological Factor (B=155) has a very low impact on the intention to continue using Business Simulation Games, while the Agency Factor like e.g. giving an incentive to students, has a higher impact (B=359) (Doyle & Brown, 2000). But also the Learning Factor (B=286) is worth to be mentioned and plays an important role in the continuance intention. To summarize the results, it is all in all recommendable to use Business Simulation Games and investigate more research on that topic (Tao et al., 2009).

Learning Factor has highest importance score while looking on the performance side, it is mentioned that Agency Factor have the lowest performance which predicts that there is a great room of improvement in this area to increase the willingness of students to play entrepreneurial business simulation during their degree program for getting maximum practical knowledge in risk-free (Chiu et al., 2005; Ringle & Sarstedt, 2016; Tao et al., 2009).

## Limitations & Future Direction

The following session deals with the limitations and future direction of this research. Firstly, the geographic aspect is an issue. (Tao et al., 2009) The research was conducted in three different countries like Germany, Kenya, and Pakistan. The selection of the countries was mixed up, which means that there was developing and already developed countries. This issue could be extended in the future to other countries, to check if the results can be generalized and transferred to other countries. The second aspect is the target group of the research. In this case, only students were asked. It is also possible to think of checking the other perspective like asking professors, what their perception of Business Simulation Games is. (Lalley & Miller, 2007) Thirdly, the variables of the model could be extended by adding other independent variables (King & Newman, 2009; Zulfiqar et al., 2019) like e.g. to add the entrepreneurial intention and to analyze, in how far Business Simulation Games do have an impact on the entrepreneurial intention of the students.

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