Impact Of Need For Recognition And Core Self-Evaluation On The Psychological Performance Of Online Group Learning During Covid 19

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Abstract

Purpose: The study is carried out to examine the impact of the need for recognition and core self-evaluation on the performance of online group learning among the PAKISTAN female students. In addition to that, the study has examined the mediating role of quality of group discussion in the relationship between the need for recognition and core self-evaluation on the performance of online group learning among Pakistani female students.

Method: The study has employed a survey-based methodology and SEM-PLS is used for the data analysis. The data is collected from the students studying at the leading Business School in PAKISTAN

Results: During the collaborative learning processes, the group discussion among group members is the system through which the individuals reveal their knowledge, understandings, and abilities and discuss the process understandings.

Implications: The scholars in this research work took a concept at a group level during the process of collaborative learning and the researchers targeted to acknowledge the previous research literature for discussion and its quality in collaborative learning groups during pandemics.

Significance: The development in the discussion from the systemic models of group outputs, the scholars focused on the evaluation of the integrated model in which quality of discussion act as a moderator to influence the group motivation and diversity on collaborative learning efficiency.

Keywords: Need of recognition, self-evaluation, online group learning, PAKISTAN, COVID-19

1. Background

The COVID-19 outbreak which started from the Wuhan city of China appeared to be the deadliest viral spread of recent times. The spread of the virus has severe and serious implications on almost
all fields of life, and predominantly the educational sector is one of them. The increased rate of affected peoples from this virus and the increase in mortality rate has led the world toward a lockdown situation which has resulted in the closure of educational institutions globally. The closure of educational institutions, which had demanded an unplanned massive transition from a physical model of learning to an online mode of learning and changed the teaching landscape in all types of educational institutes. Despite the fact that, students and teachers from the twenty-first century are largely exposed to the online teaching and virtual mode of education, however, the educational institutions at large were not ready nor equipped for any such a massive transition. Due to the unexpected circumstances, the online educational programs and transformation were a huge development as it was unplanned since the conversion from the conventional education structure took place during the normal schedule. As for the higher education institute it was considered as the transition during the time of the offering of the courses for their medical learners. In the twenty-first century, all the graduates learned more from the e-books and recorded lectures and their assessments were based on online tests. This pandemic brought an evolution in teaching expertise as well because the conventional classrooms transform into zoom classrooms, the model of “flipped classroom” adopted by many educational institutions all over the globe. However, all the higher education institute had different capabilities and opportunities, so this model supported them to sync themselves with the virtual program model during this emergency developed during the pandemic time. In this era of modernization, the firms are collaborating and networking together and they have developed a culture of teamwork in their organizations, this not only enables their employees to perform their tasks efficiently but also supports the improvement of their skill and their ability to work together as a single unit and support their colleagues. As a result, universities offer different learning programs and encourage teamwork through engaging them in such activities to enhance their skill set and help in the development of capability among students (Curșeu, Chappin, & Jansen, 2018). Recently in universities for higher education programs, there has been a change with a new practice that is through the introduction of collaborative learning, it has become one of the most general practices in universities during their degree programs to support the development of skills the capability of teamwork among students (Curșeu, Schruifer, & Fodor, 2017). Collaborative learning is fruitful for the students more than the development of teamwork skills, it is also developing the efficient instructional method that supports the attaining and transfer of each other’s knowledge because it lessens the cognitive load on the students (Clark & Mayer, 2016). The quality of social interaction among individuals that is how effectively they coordinate with each other and support each other through a diversified group of individually plays a significant role in the effectiveness of collaborative learning (Järvelä, Kirschner, & Panadero, 2015). In several universities and similar learning set-up, the learners are segregated into several groups with different degrees of interdependence, and students are assigned tasks and are instructed to accomplish these objectives together. These goals are consisting of assignments that require extensive research work and various case analysis-related tasks. The teamwork skills are practiced and developed simultaneously through different activities that involve interaction with each other. In group discussions, debates, the members of a group of learner’s share, evaluate, remember and analyze information that is shared through their interaction from each other’s knowledge. These group projects and assignments are very important for each group participant because the overall group performance is a part of their course grading scheme and these group assignments are valuable in their final GPA as well (Clark & Mayer, 2016).
the other hand, it is very important to acknowledge the variables that impact the collaborative learning group’s performance and the quality of group debates.

Collective performance is also very important for the quality of interactive relations, afterward to the individual skills, knowledge, and expertise in the collaborative learning groups (Clark & Mayer, 2016; Curşeu et al., 2017; Naseem et al., 2021). The systemic group performance model explains that teamwork quality acts as a mediating factor in the relationship between group composition and group performance. In this relationship, group performance is influenced by the group composition while the quality that is measured through the discussion and debate quality act as mediating factors (Rahimian & Hassanzadeh, 2018). The researchers established the theoretical model to investigate that in the collaborative learning groups, the teamwork quality (discussion and debate quality) act as an intermediating factor in the relationship when group composition impact group performance. In several higher educational institutions and learning set-ups, gender is considered as one of the general points during the development of collaborative learning groups, to show class demographic features (Blau, Shamir, & Avdiel, 2020).

Gender as a standard is considered one of the suitable strategies for the establishment of collaborative learning groups (gender is a significant feature that can support social categorization), although gender differences ensure a broad spectrum of variables that are extremely important for the functioning of the group. There are various life experiences qualitatively among men and women, so both genders came with various perceptions of life in the team so it will eventually substitute all difficulties in the group knowledge about the tasks (group cognitive complexity).

Furthermore, all the difficulties regarding gender differences in the engagements of learning tasks, in the same way, the differences in the interpersonal relations (as compared to the men, the women have a practice of more involvement in the educational projects, and they have more relational orientation) are various related variables for group performance and dynamics in student teamwork groups. However, the first task of the researchers is to investigate the quality of group discussion as a mediating factor in the relationship between group performance and the proportion of women in groups. Other than gender, some variables are almost equally important such as motivational variables which also impact the student engagement of learning tasks in their projects (Clark & Mayer, 2016; Järvelä et al., 2015). With this, the appropriate acknowledgment about the association between efficient collaborative learning and motivation, the scholars further need to consider those motivational factors that impact and influence the student activities and their involvement in educational tasks, in the same way, the impact on the interactive relations that develop in collaborative learning (Järvelä et al., 2015; Li et al., 2021). There are two important motivational behaviors such as core self-evaluations (CSE) and need for cognition (NFC) which are correlated with interpersonal interaction in groups and (cognitive) task engagement in groups as well.

In psychology the NFC is factor that determines individual’s effort in cognitive activities. NFC has widely defined as a need of structuring meaningful information in integrated way. The lower NFC is associated with submission ideas and suggestions and the higher NFC is linked with the appreciation of debate, idea evaluation, and problem-solving. NFC shows the students’ willingness to involve in cognitive projects and is recognized as a teamwork quality originator and a wide range of information explore in students’ teamwork groups (Ahmadpour, Asadollahfam, & Kuhi, 2020; Curşeu et al., 2017; Stover & Holland, 2018). CSE impacts the performance of individuals belonging to a wide range of professional domains. It is referred to as the self-evaluation that the individual develops regarding their capabilities, competencies, and self-worth.
(Acharya, Acharya, & Shrestha, 2020). However, CSE has a positive impact on teamwork systems because it acts as a motivational variable that significantly impacts the efficiency of collaborative learning effectiveness (Panjaitan, Hartono, & Dharmansyah, 2018). However, in the small group set-ups, NFC encourage participants to openly give their opinion also encourages information exploration that would also lead to the various perceptions, and positive self-evaluation is anticipated to encourage involvement in interpersonal interactions, the researchers investigated the amount of quality interpersonal interaction in collaborative learning groups which act as a moderator in the relationship among group performance and two motivational variables (Schei, Sverdrup, & Andvik, 2020). Based upon the above discussion the study has planned

- To examine the impact of NFC on the group performance of female students.
- To examine the impact of CSE on the group performance of female students.
- To examine the moderating role of quality of group discussion in the relationship between the NFC and group performance of female students.
- To examine the moderating role of quality of group discussion in the relationship between the CSE and group performance of female students.

2. Literature Review

During the lockdown period that had resulted due to the pandemic situation, many educational institutions from kindergarten to the elementary level were shut down for an undefined period as there was no certainty about its improvement. The conventional way of education and academia had been stopped by various colleges, universities, and schools. Medical professionals recommended social distancing played a vital role to control the spread of the virus but it had an adverse influence on learning programs and activities. The institutions of the education system tried to develop other options to cope up with this challenging situation. The prevailing situation of closure of educational institutions emerged as an opportunity to explore and promote the virtual learning programs and learning activities so that they ensured that the education system could continue their academic programs without interruption in learning. Various teaching staff participated in virtual learning programs they provide the maximum possible course content and help their learners to polish their skills, the virtual assessments were conducted by the teachers to evaluate their learner’s performance.

The institutions that were never in favor of e-learning programs this pandemic situation however forced them to acknowledge the modern way of learning. However, the current condition introduced many challenges for the educational sectors, especially it is a tough time for the professional degrees programs such as for medical degrees.

Virtual learning depends upon online programs with the support of gadgets such as laptops, computers, and smartphones and the internet facility is very important for the success of this e-learning program. These e-learning programs develop the system of education which provides ease to the learners and they are more flexible, creative, and organized now. Online programs are pocket-friendly in some cases because the delivery of course syllabus among learners of backward or countryside areas was particularly costly.

The organizations such as WHO and United Nations (UN) supported the developing countries to cope up with their educational requirements through online videos provided by them. The higher education institute executed various creative plans to cope up with the current challenges, for e-learning they are using different applications and software for their virtual courses such as
Microsoft Teams, Zoom, and Google Classroom. These applications or soft wares are not for the completion of their degrees only through these applications they could discuss their concepts with their fellows and teachers and they can ask questions from their teachers it stimulates to boost their confidence level during this emergency management situation. During this pandemic period, the forecast for these online learning programs is that the teacher’s role develops from the conventional teacher-centric to the model of student-centric model which supports the existing course and guidelines during this pandemic period at a higher education institute. However, this research work has the objective to evaluate the insights of the educational faculty and administrative staff, estimate their challenges, their hurdles in this tough time of the pandemic, and this study trying to know about their experiences during the transformation of the conventional learning towards the e-learning program. In addition to this, the research work considers all the influencing aspects which play a positive role in the acknowledgment of virtual learning programs as a mode of learning for formal degrees as well even after the lockdown this practice would continue in the future because in some cases it is more pocket friendly and affected as compared to the conventional learning. During the last decade, significant attention has been paid from researchers on gender diversity in team’s performance the implications of gender diversity is considered intellectually important particularly because of the increase in women participation and the growing number of women's roles in the management and their efficient contribution in companies work for teams. The previous research work regarding gender differences and gender roles claimed that women and men have different perceptions of life which would support in dealing with all types of issues in a group (Clark, Rudolph, & Zhdanova, 2017), so, gender diversity plays a vital role in the efficiency of group performance and group dynamics as well. Therefore the research work acknowledged particularly about the women that they are more socially sensitive as compared to men, due to the women habitual communal behavior they have influential interpersonal communication skills and women have an advantage for their intellectual level as they are more emotionally intelligent as compared to the men (Bharti & Rangnekar, 2019; Krén & Sélléi, 2021). Whereas on the other hand in collaborative learning settings, men are more confident and aggressive in their communication style as compared to women, whereas women emphasize building relationships and cooperation with team members.

3. Conceptual Framework

The study is among the seminal work on the issues related to NFC, CSE, group discussion, and group performance of female students studying the higher education institutes. The conceptual framework is mapped in figure 1 below.
The need for cognition was first identified in the seminal work of Cohen, Stotland, and Wolfe (1955), who argued that need for cognition is organization of one’s experience in a meaningful way, expression of one’s need for organization in an integrated but meaningful way, and finally structuring of the relevant way in a meaningful but integrated way. They continued and argued that the frustration of the need of cognition would generate negative feelings such as anxiety, and deprivation, consequently, will instigating the need for intense efforts for the structuring. They concluded with the argument that the higher level of NFC will lead towards starvation of cognitive clarity and most often see ambiguity.

Need for cognition (NFC), is a model required to attain cognitive motivation (the model which is involved in information processing actions), it was broadly investigated as per the perception of individual difference that anticipates the several individual and group level performances (Stover & Holland, 2018). In NFC the individuals are larger in the number who are involved in this construct for the research of information, the individual tends to investigate previous discussions and information through their research, they produce more different results for several issues, all solutions motivate them to attain more knowledge at a higher level (Ahmadpour et al., 2020; Schei et al., 2020). It is found by the researchers that the people with the higher in the need of cognition are paid more attention on relevant argument as it is likely to shape their attitude. In the contrast, people on the low side of NFC, consider peripheral cues which include the credibility of the speaker as most important, and this shapes their attitudes. Most of the researchers, people with low NFC can also be trapped in any stereotypes, which also have a significant impact on their decision-making and judging ability. The NFC has a significant impact on intelligence as the research studies on the impact of NFC have argued that the people with a higher level of NFC perform intelligently in groups than those with the lower NFC. Similarly another group of researchers have
argued that people with high NFC are likely to attribute a higher levels of social acceptability as well as attraction towards a mates. Similarly, the study considers that the NFC is a significant determinant of a group performance of female students. Thus, the study has broached the following hypothesis:

**H1:** Need for cognition has a significant impact on the group performance of female students.

Student motivation to involve themselves in multifaceted cognitive tasks and their engagement in group arguments is impacted through their core-self evaluations (CSE) or the self-worth of the students which he/she generally evaluates about themselves. CSE is considered as the general evaluation of an individual’s efficiency and self-confidence or the positive concept and self-value about themselves is related with a project performance of groups in their tasks and the group efficiency and team dynamics as well (Panjaitan et al., 2018; Wang & Hu, 2018). The core self-evaluation theory has appeared as an excellent construct, that linked the personality traits with issues in organizational and individual psychology. The basic assessment, an individual makes about his or her capabilities as well as self-worth is known as the core self-evaluation. The concept of core self-evaluation was coined by Timothy Judge, which basically explains, how individuals working in group access themselves, their behavior in a group, their attitude towards group environment, and lastly how they perceive themselves and their self-esteem in a group. They further argued that the individual is also concerned about his or her competencies within that group. The people who evaluate themselves positively significant are considered to be encouraged more to accomplish their tasks in their group set-ups, in task-related behaviors the self-evaluation plays a vital role to drive the tasks. The quality of relational interaction, the performance, and the engagement in group tasks are increased due to the CSE (when the quality of interpersonal interaction is high, there is a positive link exist between the CSE and the interpersonal behaviors) (Curșeu et al., 2018). Additionally, when the quality of interpersonal exchange is high then team performance is positively impacted by the CSE (Curșeu et al., 2018).

The group members who have a positive self-evaluation are much more confident and they perform well in the group among other group members, however, these individuals have more compassion towards the social facilitation processes. Additionally, the meta-analysis of Acharya et al. (2020) claims that there is a negative relationship between a high level of CSE and counterproductive work behaviors. Similarly, the group members with high levels of CSE are more motivated towards their task performance in their group they also involve themselves towards the psychosocial condition inside their group. Thus, the study has proposed the following hypothesis: **H2:** Core self-evaluation has a significant impact on the group performance of female students.

during the group discussions and debates, women are more likely to dedicate extra attention as compared to men in the maintenance and development of harmonious interpersonal interactions. The number of women in groups is positively related to a positive emotional environment contained by the groups that eventually encourage the number of interpersonal interactions inside the groups (Dunaway, 2019). The earlier study about the emotional environment in the group also encouraged and emphasized this statement and explained that the women percentage in groups encourages a positive emotional environment in the collaborative learning setting by the development of collective emotional intelligence (Dunaway, 2019).

The scholars, however, anticipate that in the collaborative learning groups, the women percentage must be encouraged since this would improve the quality of interpersonal interactions which would result in efficient performance in groups. All the research work that has been carried out
highlighted the point of gender differences and the engagement level in the group and the overall satisfaction level along with the educational accomplishments. Women are more efficient in making strategies and organizing their learning activities, women are more curious to ask for help from teachers and they are more satisfied with the all learning system as compared to the men (Tsay, Kofinas, & Luo, 2018). Additionally, the study about the development of team intelligence claimed a positive relationship between the performance of the group in several cognitive tasks and the women percentage in the group (Credé & Howardson, 2017).

In collaborative learning settings, the groups which are balanced gender groups and the groups which consist of female-only are performed outstandingly in group projects, on the other hand, the groups which consist of male-only and male-dominated groups are more efficient in academic achievements (Zhan et al. 2015). Women always tried positively to give more value upon the educational attainment as compared to the men. However, all the educational achievements have a direct relationship with women’s satisfied life, on the other hand, in the men’s situation it has an indirect relationship and occupational status act as a mediating factor (Plouffe & Tremblay, 2017). These discussed perceptions recommend that the women’s percentage in a group is associated positively with the quality of discussion in the group, for instance, the group mates show the satisfaction and efficiency of the group practiced during the inside discussion and the development of group debate (Erikstad, Martin, & Haugen, 2018). Consequently, it leads towards the efficient performance of the group. However, the researchers assume that the women’s percentage has a positive relationship with the performance of the group via quality of discussion.

The development of groups among students and testing them to perform a task together as a team never gives assurance that learners will involve with the learning goals and will perform collectively as a team to achieve their common goal (Clark & Mayer, 2016). The important antecedents are motivational factors for the group discussion and debate quality and finally for the group performance to accomplish their task together. On the other hand, the students require to be encouraged for their involvement in group activities to accomplish their common tasks and interpersonal interactions as well, which tends towards the success of collaborative learning groups. The motivation in which one tends to get involved in cognitive activities and start to enjoy them is known as cognitive motivation (Ahmadpour et al., 2020). The impact of NFC and CSE on the group performance of female students is not fairly well developed thereby the study has introduced quality of group discussion as an intervening factor in the relationship between the NFC and group performance and between the CSE and group performance. Thus, the study has broached the following hypothesis

**H3:** Quality of group discussion (QGD) moderates the relationship between the NCF and the performance of the group (GRP). **H4:** Quality of group discussion (QGD) moderates the relationship between the CSE and the performance of the group (GRP).

4. Methodology

This research study has made use of various procedures and statistical tools for data analysis. The collection of data was done through a questionnaire survey among the target sample. A mix of statistical and inferential tools was used for data analysis. Different sample characteristics, i.e. demographic, cultural, were presented in frequency distribution and percentage form (descriptive
form). PLS-SEM was chosen in the current study for inferential analysis, which refers to Partial Least Square Structural Equation Modeling. Using PLS-SEM, the formulated hypotheses were analyzed and tested for the supposed relationships among the variables. It was stated by Hair, Hult, and Ringle (2016) that PLS-SEM is a suitable approach for determining the complex nature relationships among the variables. Therefore, this is used by researchers as an analytical approach. PLS-SEM has been regarded as appropriate for testing a theory, prediction of outcome, formulation of a model, etc. All these characteristics make this technique unique, powerful, and better than the other approaches, which can be applied otherwise (Adeleke, Bahaudin, & Kamaruddeen, 2015; Hair, Matthews, Matthews, & Sarstedt, 2017; Ong & Puteh, 2017). While conducting the questionnaire survey, the respondents gave an expected and positive response. The received response rate was 86%, which was obtained through the distribution of 350 questionnaires. However, the number of questionnaires received was 309. The number of omitted questionnaires because of missing values and information was 7.

5. Results
The measurement model assessment was used in the PLS method for determining specific constructs and indicators’ relevance. In the PLS-SEM method, the determination of specific constructs and indicators’ relevance are two steps. The relationship between the observed and the unobserved variables of the model is determined through the measurement model, which is also known as the outer model. The test of reliability was conducted for determining the measurement model. It measured the consistency of items for determining the variables, which they were expected to measure. Construct validity is another standard for determining the measurement model. The construct validity can be determined through convergent and discriminant validities of the tools (Hair, Matthews, Matthews, & Sarstedt, 2017). Therefore, estimation of outer loadings and items reliability for every variable was determined. The standard range for outer loadings is 0.40-0.70. The value of outer loadings equal to or greater than 0.7 is considered suitable (Hair et al., 2017; Henseler, Hubona, & Ray, 2016).

Figure 1: Measurement Model
Table 1: Outer Loading

<table>
<thead>
<tr>
<th></th>
<th>CSLE</th>
<th>GRP</th>
<th>NCG</th>
<th>QGD</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSLE1</td>
<td>0.924</td>
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<td></td>
<td></td>
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<tr>
<td>CSLE2</td>
<td>0.884</td>
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<tr>
<td>CSLE3</td>
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<td>CSLE4</td>
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<td>GRP1</td>
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<td>GRP11</td>
<td></td>
<td>0.909</td>
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<tr>
<td>GRP2</td>
<td></td>
<td>0.893</td>
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<tr>
<td>GRP3</td>
<td></td>
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<tr>
<td>GRP4</td>
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<td>0.880</td>
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<tr>
<td>GRP5</td>
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<tr>
<td>GRP6</td>
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<td>0.870</td>
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<tr>
<td>GRP7</td>
<td></td>
<td>0.843</td>
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<tr>
<td>GRP9</td>
<td></td>
<td>0.904</td>
<td></td>
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<tr>
<td>NCG2</td>
<td></td>
<td></td>
<td>0.911</td>
<td></td>
</tr>
<tr>
<td>NCG3</td>
<td></td>
<td></td>
<td>0.899</td>
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<tr>
<td>NCG4</td>
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<td></td>
<td>0.893</td>
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<tr>
<td>QGD1</td>
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<tr>
<td>NCG1</td>
<td></td>
<td></td>
<td></td>
<td>0.897</td>
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</table>

Convergent validity is the next standard for determining the outer model. It is assessed by determining the measure of composite reliability, factor loadings, and AVE (average variance extracted) for all the items (Hair, Hult, & Ringle, 2016). It determines whether there is a theoretical association between the specific items after statistical analysis or not. Thus, the measure of composite reliability has been used in the current study to determine convergent validity. The level to which constructs represent the items is reflected through composite reliability (Hair et al., 2016). The value of CR must be equal to 0.70 for a sufficient level of convergent validity (Hair et al., 2016; Naala, Nordin, & Omar, 2017). The values of CR for every variable in the model are shown in Table 2. It can be seen that all the values of CR lie in the range 0.872-0.968, which indicates that all values are more than the minimum level of acceptance. The variance level between the indicators and their latent variables is regarded as AVE (average variance extracted) (Hair et al., 2016). The minimum level for acceptance of AVE is 0.50.

Table 2: Reliability
The next step is to assess the discriminant validity of the indicators. The discriminant validity ensures whether the specific measures of a variable are unrelated after the analysis as before or not. Therefore, the existence of discriminant validity suggests that the constructs are valid. It can be observed in Table 3 that values in the diagonal places are lesser than the values in rows and columns, which ensures the existence of discriminant validity of the outer model (Naala et al., 2017).

Table 3: Validity

<table>
<thead>
<tr>
<th></th>
<th>CSLE</th>
<th>GRP</th>
<th>NCG</th>
<th>QGD</th>
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</thead>
<tbody>
<tr>
<td>CSLE</td>
<td>0.900</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>GRP</td>
<td>0.671</td>
<td>0.878</td>
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<tr>
<td>NCG</td>
<td>0.871</td>
<td>0.682</td>
<td>0.900</td>
<td></td>
</tr>
<tr>
<td>QGD</td>
<td>0.808</td>
<td>0.730</td>
<td>0.894</td>
<td>0.879</td>
</tr>
</tbody>
</table>

After determining the validity of constructs in the outer model, the reliability and validity of outcomes of hypothesis testing can be assumed. The structural model is determined in the second step of PLS-SEM. The formulated research hypotheses are tested by calculating t-values and path coefficients. Following the suggestion of Naala et al. (2017), the method of bootstrapping has been used for determining standard errors, t-statistics, and path coefficients. A set of 500 resamples was taken to analyze the association between the variables. The minimum required range of samples for bootstrapping is 200-1000 to determine standard errors (Naala et al., 2017).
Table 4: Direct Relationship

<table>
<thead>
<tr>
<th></th>
<th>Original Sample (O)</th>
<th>Sample Mean (M)</th>
<th>Standard Deviation (STDEV)</th>
<th>T Statistics (O/STDEV)</th>
<th>P Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSLE -&gt; GRP</td>
<td>0.117</td>
<td>0.100</td>
<td>0.120</td>
<td>0.974</td>
<td>0.165</td>
</tr>
<tr>
<td>Moderating Effect 1 -&gt;</td>
<td>0.194</td>
<td>0.187</td>
<td>0.136</td>
<td>1.427</td>
<td>0.077</td>
</tr>
<tr>
<td>GRP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Moderating Effect 2 -&gt;</td>
<td>0.048</td>
<td>0.042</td>
<td>0.126</td>
<td>0.380</td>
<td>0.352</td>
</tr>
<tr>
<td>GRP</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>NCG -&gt; GRP</td>
<td>0.201</td>
<td>0.196</td>
<td>0.103</td>
<td>1.961</td>
<td>0.025</td>
</tr>
<tr>
<td>QGD -&gt; GRP</td>
<td>0.763</td>
<td>0.751</td>
<td>0.150</td>
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<td>0.000</td>
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</tbody>
</table>

The suitable measure for determining the structural model is the coefficient of determination (Shuhaiber, 2018; Hafeez et al., 2018; Abdulmuhsin et al., 2021). The strength of the model can be determined through this measure. Moreover, the R-square value determines the percentage change in the endogenous variable by the explanatory variables of the model. The level of R-square must be equal to or greater than 0.10 for being sufficient (Ramayah, Cheah, & Memon, 2018; Basheer et al., 2021; Raoof et al., 2021; Nuseir et al, 2020; Basheer et al., 202).  

Table 5: R-Square

<table>
<thead>
<tr>
<th>GRP</th>
<th>R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.538</td>
</tr>
</tbody>
</table>

The amount of variation in the dependent variable is measured through the R-square value. However, it also determines the influence of explanatory variables on the endogenous variable of the model. The increase in the squared value of one construct in terms of other constructs can determine this effect (Hair et al., 2016). These effects are shown as $f^2$. According to Hair et al. (2017), the value $f^2$ can be equal to 0.15 (large), 0.35 (medium) or 0.02 (small).
6. Discussion and Conclusion

The researchers claimed that the women percentage in groups, core self-evaluations, and group level need for cognition are the significant analysts of discussion quality, as a result, these factors anticipate the group performance in the online group learning system (Curșeu, Rusu, & Maricuțoiu, 2020; Naïwen et al., 2022; Sarfarz et al. 2021). All the arguments about the moderators were discussed and explained that discussion quality acts as a moderator in the association between group performance and group design attributes.

The percentage of women in the group has direct and mediated relation as well as the performance of the group. Because of their habit of interaction women encourage positive interpersonal interaction among the group members inside the groups. Afterward, the mediating association, the percentage of women in the group had a positive and direct relationship with the task performance of the group. Here in this research is has also been identified that along with the relational dimension that is measured by the group discussion quality the other factor that is probably cognitive) the mechanism is also influencing. These results are in coherence with the previous research on collective intelligence. Therefore, this has been inferred that the fraction of women participation in a group setting has a positive association with collective intelligence regardless of the type of interaction whether carried out in face to face setting or through online mediated sessions (Credé & Howardson, 2017; Mohsin et al., 2021). The direct association that exists between the proportion of women in the group and group performance is dependent on the factor of Collective intelligence in the collaborative learning group. However, this further needs to be investigated through extensive research work in determining the extent of its implication of the collective intelligence as a mediator and the impact of women participation in a group performance in collaborative learning.

According to the researchers the two motivational factors that influence both the quality of social interaction in collaborative learning framework and students interaction in their educational responsibilities (Molinillo, Aguilar, & Sánchez, 2018; Li et al., 2021). Therefore, the association in the group for NFC in the group performance is facilitated by the value through group discussion quality. The relationship between the two variables that are NFC and group performance is facilitated by group discussion quality since the better the quality of discussion the better will be the team's performance and vice versa. Therefore, NFC can be considered as an important factor since the groups with a high value of NFC will have a higher quality discussion and ultimately this will result in higher performance.

CSE is yet another important factor to influence collective performance in learning as they promote an environment of teamwork and collective task performance. This has an overall impact on the group performance that is driven through positive self-evaluations which results in an improved quality of discussion leading to a better group performance.

Gender diversity has an overall encouraging impact with its positive associations. The comprising group with the diversified members including both male and female is much suitable as the educators would take the support from this in the collaborative learning. Here the quality of debate with the group members determines the group performance therefore the instructors who are using this methodology need to emphasize as well as assist in conducting group discussions. To facilitate in developing an overall environment for a group interface the instructors could that the help of group training and other group exercises. Therefore, for the group arrangement for understanding the core self-assessments are not always susceptible to manipulation that other factors that could
impact the social interaction also need to be identified whereas their influence also needs to be investigated.

Limitations of the Study
This research work has some constraints as firstly it needs to be acknowledged that it is not experimental research, however, common assertions are not guaranteed the reason behind this is that it influences the independent factors contained by this model. The factor such as gender diversity is considered as a quasi-manipulation because generally, the research regarding gender is in psychology. Therefore, no general discussions develop regarding the various other motivational factors that are considered for this research.
Secondly, in this discussed framework few factors were gathered from a similar source, however, the researcher's findings tend to be impacted through the common method bias. In link to rectify the generally preferred method, group performance was estimated and anticipated through the intelligence of outsourcing, however, the factors which are mediating and independent were dependent on self-evaluation and however the estimations were divided into various intervals, the presence of common method bias cannot be omitted completely. Lastly, since this study was conducted in the first-year course due to which it was not possible to regulate individual academic results which are possible in an association with the collaborative team performance in the student groups.

Suggestions
To conclude this the researchers suggested the requirement for combined research for further investigation to test the relationship between the social factors and motivational variables because these factors impact the efficiency of collaborative learning, and the researchers examined the magnitude of the impact an effective conversation plays on intermediates and the impact of group motivation and gender diversity on the collaborative learning group performance

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