1 COVID-19 RISK PERCEPTION, STUDENT ENGAGEMENT, PEER TEAM LEARNING AND LEARNING SATISFACTION AMONG HOSPITALITY AND TOURISM STUDENTS IN GHANA

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Abstract

This study examined COVID-19 risk perception, student engagement, peer-led team learning, and learning satisfaction among students in the hospitality and tourism departments in Ghanaian universities. Valid responses for this study from 440 hospitality and tourism students across four (4) universities across the country were analysed to achieve this objective. COVID-19 risk perception proved to have a significant positive impact on students' engagement and peer team learning, but an insignificant negative influence on learning satisfaction. The results also underscored the positive role of the learning environment in driving students' engagement and learning satisfaction including the positive bearing of students' engagement on learning satisfaction. The study contributes to theory and practice by extending the social cognitive and self-determination theories to understand the links between COVID-19 risk perception, student engagement, peer-led team learning, and learning satisfaction among students in the hospitality and tourism departments in Ghanaian universities. Thus, the integration of social cognitive and self-determination theories in this study provides a more comprehensive understanding of the factors influencing learning experiences during the pandemic.

Keywords: COVID-19 risk perception, student engagement, peer-led team learning, learning satisfaction

INTRODUCTION

An infectious coronavirus, known as COVID-19, is spread through droplets from one person to another (CDCP, 2020, 2020). As of the 12th of April 2023, the COVID-19 statistics stood at 762,791,152 confirmed cases, including 6,897,025 deaths, globally (WHO, 2023). According to the Ghana Health Service (GHS), as of February 23rd, 2021, Ghana had recorded a cumulative total of 171,619 COVID-19 cases. This figure included 1,462 fatalities and 170,131 recoveries. At the time of this study, the top three regions in terms of COVID-19 cases were the Greater Accra Region [97,480 cases], Ashanti Region [22,640 cases] and Western Region [8,815 cases].

This pandemic has affected nations, at all levels, including businesses, rich, poor, young, and old in society and worst of all, the associated death rate (Cao et al., 2020). The focus of this study is on how COVID-19 has affected the educational sector, especially among the hospitality and tourism students in Ghana. According to Patrick Kuma-Aboagye, Director General of the GHS, as of February 9, 2021, Ghana had registered a total of 142 COVID-19 cases across various schools since their reopening. A total of 56 cases were confirmed in 23 schools in the Greater Accra Region, 82 cases in the Eastern Region involving 73 pupils and nine members of staff, three cases in the Upper West Region, and one case in the Western Region. These incidents in our schools had a psychological impact on many pupils since they were afraid of catching the disease if they participated in events that involved a large number of people. According to UNESCO (2020) as of 1st April 2020,

about 1.598 billion students from various educational institutions at various levels from 194 countries were asked to stay at home and study due to the closure of schools of which Ghana was no exception. In the case of Ghana, all physical educational institutions from primary to higher learning institutions were closed because of the COVID-19 surge, although this approach had some challenges (Owusu-Fordjour et al., 2020).

Many educational institutions adopted new approaches to aid teaching and learning, using online platforms. This has exerted pressure on many educational institutions to invest massively in infrastructural development to cope with the new normal. Most higher education institutions have switched to online lectures/ tutorials and closed their physical libraries to avoid the spread of the COVID-19 virus (Cao et al., 2020; Owusu-Fordjour et al., 2020).

The new normal approach to teaching and learning according to Honorato et al. (2020) and Rose (2020) is more likely to have significant changes to the way the future workforce is educated, and this approach must be properly handed well to ensure that there is quality and effective teaching and learning. As part of the approaches to curb the spread of the COVID-19 infection, most school dormitories have been closed to students, meetings with friends and mates on campus have been cancelled, and other social events on campus such as parties have been banned (Cao et al., 2020). There has also been a loss of students' jobs putting much burden on most students who perform such school jobs or activities to take care of their educational needs (Liu et al., 2020).

The COVID-19 pandemic has had a significant impact on the emotional well-being of students, as they have faced unprecedented challenges and stress during this global crisis. Studies have shown that it has created fears, frustrations, anxiety, and boredom among students (Cao et al., 2020; Brooks et al., 2020; Ma & Miller, 2020; Liu et al., 2020). Aside from the negative impacts of COVID-19 on people and societies, it has increased the level of personal hygiene among all people (Elmer et al., 2020).

Risk perception is a subfield of psychology that deals with an individual's perception and comprehension of a variety of objective risks in their surroundings. Risk perception is an important factor that has a significant impact on people's risk behaviours. According to Adefuye et al. (2009), when the population has a lower level of risk perception, it has a greater influence on their risk behaviour, which may reduce their preventive behaviour in the fight against the pandemic, as opposed to those with a high level of risk perception, who take extra precautions to prevent the spread of diseases (Brug et al., 2004). Risk perception influences many aspects of people's lives (Yang & Cho, 2017), including students' overall style of doing things (Gao et al., 2019). Despite existing research on COVID-19 risk perception, student engagement, peer team learning, and learner satisfaction, there appears to be a noticeable research gap in the connections among these factors within the Ghanaian context, specifically in the Ghanaian educational setting, particularly among hospitality and tourism students.

Students' engagement alludes to the degree of effort and psychological investment students dedicate to enhancing their learning experience. This encompasses their active participation and commitment to the learning process, aimed at acquiring new knowledge and skills essential for academic success (Dixson, 2015). Students' involvement in the teaching and learning processes has a great impact on how they interact with one another and in their fields of work, and if not adequately handled, this can have a bearing on their

learning satisfaction (Gray & DiLoreto, 2016; Nortvig et al., 2018).

The quality and acceptability of teaching and learning in higher education institutions are heavily influenced by the satisfaction and experiences of students (Sampson et al., 2010). As a result of factors like digital literacy abilities, social and professional activities and the learner support system (which includes appropriate academic assistance), the degree of pleasure in school is affected (Allen et al., 2002). Students' overall satisfaction is influenced by factors such as the usage of learning techniques, learning challenges, peer-tutor assistance, capacity to apply information, and attainment of learning objectives (Moore, 2009). When first-rate learning practises are implemented through good planning, student engagement rises, facilitating information acquisition and comprehension (Ismail, 2018). Improving the learning process with proper learning techniques may result in improved outcomes and a high level of student satisfaction (Aung & Ye, 2016; Thanh & Viet, 2016).

However, students' satisfaction is expected to diminish throughout the COVID-19 period owing to the considerable risk of contracting the disease if they come into contact with sick persons. This is because most schools have limited face-to-face engagement for their classes and instead focus on online platforms, with no indication of when students would completely resume face-to-face or in-person education and normal school life. Students are now unable to participate in peer-led team learning in most educational institutions in Ghana owing to social distance and the fear of catching COVID-19.

In addition to the conventional lecture style that has been so firmly established in our educational institutions, peer-led team learning is a method in which students or learners actively participate in small group interactions (Snyder et al., 2016). The purpose is to get students in small groups to brainstorm and

undertake problem-solving exercises, help weaker students increase conceptual knowledge, and talk about academic concerns (Gafney & Varma-Nelson, 2008; Gosser et al., 2001). However, due to the emergence of the deadly COVID-19, students are unable to engage in many academic activities that are required to acquire knowledge, even among themselves, due to the high risk of being infected with the disease when they come into contact with an infected person or student.

The pandemic has had a substantial impact on education institutions in general, owing to school closures and the large infrastructural improvements required to carry out effective teaching and learning processes. COVID-19 is spread from person to person through physical contact and the crowded nature of educational institutions makes them conducive environments for the spread of the virus. This was the reason why over 990 million students in pre-primary, lower-secondary, upper-secondary, and higher education levels throughout the world were unable to return to their schools or institutions (UNESCO, 2020).

Previous studies in the realm of hospitality have focused on pedagogic forms of study that primarily focus on curriculum difficulties (Fidgeon, 2010), with minimal studies in hospitality education and pandemics such as COVID-19. This pandemic is a significant impediment to the tourism sector and educational systems. A student's academic and social growth may be severely hindered by mental health issues, which can have a long-term influence on their career and personal futures (Suldo et al., 2014; Wynaden et al., 2014). Because of the rapid spread of COVID-19 and the widespread use of social distancing techniques, it is expected that students' mental health will be affected, along with their overall social well-being.

Despite extensive research into the influence of COVID-19 on other sectors of the economy, there

is little literature on COVID-19 risk perception, student engagement, and peer team learning satisfaction in our hospitality educational institutions (Baum et al., 2020; Baum et al., 2016). It is against this background that this study seeks to fill the gap identified by way of analysing the current shift in hospitality education and reveals the possible impact of COVID-19 on students' academic achievement in hospitality and tourism education by examining their COVID-19 risk perception, student's engagement, peer team learning and learning satisfaction. Lastly, this study deviates from other studies by integrating both social cognitive theory and self-determination theory to comprehensively understand the factors shaping learning experiences during the pandemic.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Theoretical Support

The social cognitive theory [SCT] (Bandura, 1986) and the self-determination theory (SDT; Deci & Ryan, 1985) underpinned this study. SCT posits that individual learning and behaviour are influenced by the dynamic interplay of personal, behavioural, and environmental factors (Bandura, 1986). In the context of this study, SCT is used to explain how COVID-19 risk perception, as a personal factor, can impact student engagement, peer team learning, and learning satisfaction among hospitality and tourism students in Ghana. SCT emphasises the importance of observational learning, which occurs when individuals acquire knowledge, skills, and attitudes by interacting with and observing others (Bandura, 1986). This concept aligns with the study's focus on peer-team learning, as students are expected to learn from their peers through collaboration and observation.

SDT focuses on the psychological needs that drive human motivation and proposes that individuals are more likely to be motivated, engaged, and satisfied when their needs for autonomy, competence, and relatedness are fulfilled (Deci & Ryan, 2000). In the context of this study, SDT is employed to understand how students' psychological needs influence their engagement in learning activities, participation in peer team learning, and overall learning satisfaction during the COVID-19 pandemic. The fulfilment of these needs can be crucial in promoting effective learning experiences and maintaining students' well-being during challenging times (Deci & Ryan, 2000).

Learner's Satisfaction

Students' satisfaction with their academic achievement or education is defined as a subjective and cognitive appraisal of the perceived quality of life at school (Baker et al., 2003). Students' happiness is heavily impacted by their level of participation (Korobova & Starobin, 2015; Ros et al., 2012). Students' engagement and satisfaction levels, when combined, might reflect a better knowledge of teaching and learning at the higher educational level (Gray & DiLoreto, 2016). According to Richardson and Swan (2003), there is a strong association between students' total engagement level and their degree of happiness at higher educational levels. Marks et al. (2005) posit that a satisfied student is a sure sign of a successful learning experience and that students' perceptions of their learning outcomes are a reliable indicator of their feelings of satisfaction with their educational experiences, whether they occur in person or online. According to Ikhsan et al. (2019), effective student engagement adds greatly to learner or student happiness and has a favourable impact on their academic attainment level. According to Scharenberg (2016), student satisfaction is related to characteristics such as wellness, general life satisfaction and social ties (Persson et al., 2016); school involvement (Danielsen et al., 2011); and academic performance (Korobova & Starobin, 2015). All of these elements have a substantial impact on the student's level of

pleasure. Studies have shown that negative behaviours such as stress and depression (Wang & Fredricks, 2014); absenteeism and drop out of school (Takakura et al., 2010) all have a negative influence on student academic progress.

COVID-19 Risk Perception and its Impact

The term risk perception refers to how individuals perceive events that are connected to dangers to which they are or may be exposed (Rohrmann, 2008). It encompasses a wide range of negative consequences that people identify with a specific cause (Renn & Rohrmann, 2013). There are multiple aspects of risk perception that influence individuals, including individual and societal characteristics, as well as other social, cultural, and environmental factors. In Pidgeon's (1998) view, these factors go beyond the standard definition of danger and instead are based on the personal experiences, perceptions, attitudes, beliefs, and feelings of individuals, as well as larger social, cultural, and institutional practices. These risk perceptions serve as a preventative strategy for successful decision-making (Wiedemann & Schütz, 2005). Participation in preventive health behaviours is impacted not only by objective health risk awareness but also by health beliefs and unique health cognitions (Renner et al., 2008). According to Cori et al. (2020), the following characteristics contribute to understanding risk perception and its influence on decision-making: familiarity, controllability, voluntary exposure, potential catastrophe, equity, immediacy of danger, and degree of knowledge. Risk perception is an individual's subjective judgement on the features, severity, and management of such occurrences. It is typically determined by how individuals perceive such danger, which results in a cascade of fear which spreads across society.

Since the devastating COVID-19 outbreak, many individuals have died worldwide, and many economies, both developed and developing, have been damaged. Fear is one of the COVID-19 traits that affects many people, particularly students at higher education institutions. Students are afraid of contracting the sickness and, as a result, are unable to connect successfully with their peers. The risks associated with COVID-19 are complicated, and it is critical to investigate how risk perception affects student academic performance. The current concern and perception of the dangers of COVID-19 may be used to promote enhanced readiness and improved response by the health sector to assist in improving academic achievement (Cori et al., 2020). According to Brug et al. (2009), risk perception is one of the important variables in determining individuals' responses or attitudes regarding global pandemics such as COVID-19. Risk perception is defined as a cognitive process in which people engage in many daily tasks and are in charge of guiding people's behaviour when they must make judgments regarding possible dangers (Capone et al., 2020). They include several elements, such as present and future repercussions, as well as their influence on people's emotions and well-being (Slovic, 2001). Risk perception has an influence on the overall well-being of individuals in a specific place, hence information concerning such risks must be managed carefully to minimise misinterpretation among people. Furthermore, if the information provided is insufficient, it can lead to people taking inappropriate protective actions (Seale et al., 2009), such as disobeying public health authorities' recommendations or, on the other hand, negative emotional responses and unwarranted concerns about contact with other people (Wang et al., 2018). According to Fraser's (2020) research, people's risk perception varies with age.

Literature suggests the COVID-19 pandemic has had an impact on the psychological and physical

well-being of students, the general public, patients, medical personnel, children, and the elderly (Cao et al., 2020; Huang et al., 2020; Liu et al., 2020). According to Pragholapati (2020), COVID-19 has afflicted around 24.9% of pupils worldwide, and as a result, they have suffered varying levels of anxiety since the breakout of COVID-19. The pandemic has had an impact on academic activities like everyday school life and delays in academic activities, all of which have had an impact on students' academic progress. Many higher education institutions have switched most of their operations to online learning platforms to slow the development of the COVI9-19 pandemic. It is critical to note that, in the case of hospitality and tourism training, the big component of practical training is likely to have a significant impact (Kaushal & Srivastava, 2021). This epidemic has had a detrimental influence on several nations, including Hong Kong, China, Singapore, and even Canada, where hospitality and tourist education are key priorities. Many academic institutions have reduced face-to-face teaching and learning, which influences student academic progress as well as their career growth and objectives. Indeed, students found it difficult to communicate with the academic community (e.g., peers, teachers, advisors, and administrators), which has reduced team building among students (Aristovnik et al., 2020). In most developing countries, where information, communication, and technology are not well grounded for teaching and learning and internet access is expensive, it puts a lot of stress and cost on many students, affecting teaching and learning, especially with the ongoing COVID-19 pandemic (Adedoyin & Soykan, 2020; Dhawan, 2020; Marinoni et al., 2020).

A recent German study found that individuals were concerned about COVID-19 in general, but less concerned about being infected, and that older people believe they are less likely to be infected by the COVID-19 pandemic than younger ones (Gerhold, 2020). In this context, it would be fascinating to investigate the influence of this construct on the well-being of students during the epidemic. According to Arnsten (2009), fear has a negative impact on the brain architecture of memory and learning; students who have had fatal or chronic scary experiences frequently lose their learning capacity, resulting in poor academic and learning performance or failing grades. The study, therefore, hypothesised that in a practical curriculum like hospitality, student engagement, peer-led team learning and student learning satisfaction would be hampered; COVID-19 risk perception was expected to have a negative effect on student engagement, peer-led team learning and student learning satisfaction.

Based on this, the following hypotheses are presented.

Hypothesis 1a: COVID-19 risk perception has a significant negative influence on student engagement.

Hypothesis 1b: COVID-19 risk perception has a significant negative association with peer team learning.

Hypothesis 1c: COVID-19 risk perception has a significant influence on student learning satisfaction.

Peer Team Learning

The manner of teaching and learning at higher education institutions is mostly focused on instructor-centred lectures, assignment verification, and so on. Many studies have criticised these strategies as ineffective for pupils (McKeachie et al., 1987; Smith et al., 2005). According to these findings, this strategy provides pupils with little chance to build their own critical and metacognitive thinking abilities. Students must be permitted to generate and construct their knowledge for higher-level reasoning and conceptual grasp of what is being studied to be

effective in teaching and learning (Varma-Nelson & Coppola, 2005). When teaching and learning are based on student-centred groups, they have the potential to improve academic accomplishment as well as lead to more positive attitudes and self-concepts about their educational experience and the subject area (Johnson et al., 1998; Stevens & Slavin, 1995). Models or ideas such as problem-based learning (PBL), process-oriented guided inquiry learning (POGIL), and peer-led team learning (PLTL) describe student-based learning (Eberlein et al., 2008). This study, on the other hand, focuses on peer-led team learning (PLTL).

According to Chan and Bauer (2015), data suggest that when students participate actively in PLTL, they tend to stay in their course of study and acquire a stronger interest in the subject, resulting in excellent academic accomplishment. It must be established that the focus of peer team learning is to group students into small groups of five to eight, with a ladder to engage the group in solving critical issues in their field of study, assistance in understanding basic scientific concepts, and discussion of ideas to improve the students' lives (Gafney & Varma-Nelson, 2008; Gosser et al., 2001).

Peer-Team Learning is mostly centred on group learning in school. It is built on interaction among a small group of students who exchange views on a common academic attainment concern (Roth et al., 2001). PTL involves students working together to solve an issue while peer leaders provide guidance on resources, thinking processes, and methods (Crocolice & Deming, 2001). Furthermore, peer leaders foster a conversation among students in a group so that they may connect with one another, stimulate brainstorming, and encourage them to solve and debate structured issues (Gosser et al., 2001). Peer team learning has shown that students do better academically when they participate in team learning (Chan & Bauer, 2015). Other research has found that

peer team learning can benefit students by introducing them to issues that may not be fully covered in the curriculum (Tang et al., 2004). Peer teachers who guided small group tutorials in a problem-based curriculum were seen as better at providing feedback, empathising with student issues, establishing a better tutorial atmosphere, and getting support from learners than groups mediated by a faculty member (Kassab et al., 2005). There is, however, minimal information on how happy students are with peer teaching vs teaching done by a faculty member, as well as how attentive students are to criticism of their communication skills from near-peer student instructors. As a result, the study presents these hypotheses.

Hypothesis 2a: Peer team learning has a positive influence on student engagement.

Hypothesis 2b: Peer team learning has a positive influence on students' learning satisfaction.

Student Engagement

Student engagement is widely recognised as a key component influencing students' academic progress in higher learning educational institutions. According to Kahu (2013), student engagement studies are extensively conceptualised and explored. Students' engagement is highly valued since interested students may acquire and master more skills and are more likely to impact their level of happiness. The importance of student engagement and its influence on student accomplishment is no longer debatable (Trowler & Trowler, 2010). Researchers described and comprehended student participation in a variety of ways (Ashwin & McVitty, 2015). According to Fredericks et al. (2004), student engagement is a tri-dimensional concept: "behavioural, emotional, and cognitive", which are influenced by a variety of factors including "teachers, institutions, students, families, and communities, as

well as curriculum and resources available". According to Kahu (2013), research enhanced Fredericks et al.'s (2004) definition by including structural and psychological repercussions (proximate and distal) as a manner of clearly defining the level of student involvement. This complicates the definition of engagement, and it is not the purpose of the study to resolve the complicated nature of the engagement construct, which incorporates a number of aspects. Several new empirical studies that investigate various facets of student involvement have arisen as an extension, to address the constraints of the Fredericks et al paradigm (Kahu, 2014; Maskell & Collins, 2017; Nelson et al., 2014).

This present outbreak has, in some manner, affected student involvement throughout the world. According to Nepal and Rogerson (2020), student involvement is often regarded as a critical component influencing academic success and learning at the postsecondary level. This has become required since it is extensively discussed and explored, particularly in light of the COVID-19 pandemic (Kahu, 2013). Significant study should be conducted on the amount of student engagement since students learn more when they are involved in class, which is critical to academic progress and learning satisfaction. The importance of student involvement and its influence on student accomplishment is no longer debatable (Trowler, 2010). Student involvement is difficult in this present epidemic, as most higher learning institutions have switched to online learning, because online learners appear to have fewer possibilities to engage with the school, indicating the absence of university elements. Students in the hospitality and tourist industries, where the majority of their training is practical, are especially vulnerable due to a lack of physical interaction with their facilitators. When there is a lack of engagement, academic performance may suffer, which in turn will have an impact on job

ambitions or performance. The current COVID-19 epidemic must emphasise the importance of our higher learning institutions' ongoing engagement efforts in creating and maintaining student hope and engagement levels, which aid in student retention (Zhong et al., 2021).

Although the Internet has compelled many schools to spend extensively on technology for teaching and learning, not all courses can be delivered online due to practical considerations, and hospitality and tourism education is no exception. Active learning techniques might be used in some aspects of the course, such as collaborative group work, assisting students' presentations and discussions, actively sharing resources, providing course assignments with hands-on components, and so on (Martin & Bolliger, 2018). Investment in technology for teaching and learning has been proven to greatly boost learner engagement (Kahn et al., 2017), particularly when facilities integrate multimedia technology while instructing students (Geerling, 2012). Furthermore, kids learn better from computer-based education including words and visuals than from words alone in academic learning (Mayer, 2017), and this can have a huge positive impact on the students' lives. The following hypothesis is proposed:

Hypothesis 3: Student engagement has a significant positive influence on student learning satisfaction.

Learning Environment

One of the important aspects that encourage teaching and learning is the character of the university environment. Large sums of money are expended in transforming classrooms into technologically equipped learning spaces in modern education (Beery et al., 2013). Technology appears to have taken over modern education; SMART Boards, interactive projectors, integrated cameras and multimedia tools,

and internet-based technology have all refurbished the modern classroom (Bouslama & Kalota, 2013).

According to Brooks (2011), the physical environment of the school can boost students' learning capacities and academic achievement. According to studies, classrooms are thought to encourage student-centred learning and capitalise on student choices and current lives (Gurzynski-Weiss, et al., 2015). It is considered that having an innovative and well-designed educational environment facilitates student-centred learning, equalises participation, and allows pupils to work with more peers than they would in typical classrooms (Gurzynski-Weiss, et al., 2015). However, any pedagogical adjustments based on learning would be ineffective without teachers and instructors implementing practical pedagogy with the space's intended usage (Bouslama & Kalota, 2013; Dittoe, 2002). Thus, it is pointless to make any design changes based on learning unless educators apply pedagogy that is appropriate for the space's intended

purpose. Effective learning settings must be relevant to students' learning and persistence (Earthman & Lemaster, 2009). Teachers and trainers should be able to facilitate the process of teaching and learning (Bouslama & Kalota, 2013). As a result, a classroom is just a physical reality that serves to facilitate the teaching and learning processes (Dittoe, 2002). Classroom design may help students stay motivated and on task (Miller et al., 2001). Thus, the nature of the physical classroom, as well as the use of technology for teaching and learning, all contribute to the learning environment. As a result, the study presents these hypotheses.

Hypothesis 4: The learning environment has a significant positive bearing on student engagement.

Hypothesis 5: The learning environment has a significant positive influence on student learning satisfaction.
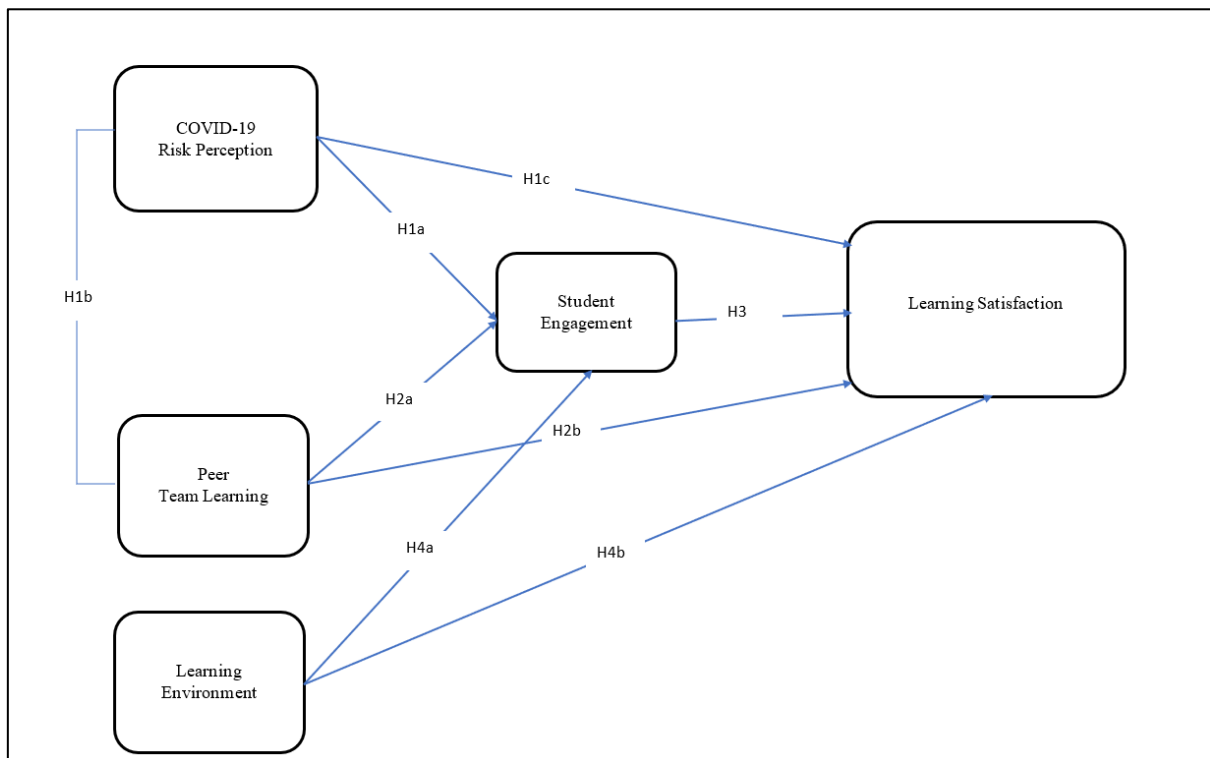

Figure 1: Conceptual Framework for the Study

METHODOLOGY

Sample and Procedure

Through a quantitative research approach with a cross-sectional design, the study focused on students in the hospitality and tourism departments of traditional and technical universities in Ghana. The total number of hospitality and tourism students for the four universities was 1,340. As a result of the COVID-19 pandemic, and the unwillingness of people to touch or come into contact with other people, a convenience sampling technique was adopted for the study to get the participants for the study (Etikan et al., 2016). The respondents were from four purposefully selected universities located in the most affected regions of Ghana (i.e., Greater Accra and Ashanti regions). The sample size was 440 respondents who responded to an online survey using Google Forms. Guided by the Krejcie and Morgan (1970) approach, which recommended a sample size of 297 for our population of 1,340 students, the study exceeded this recommendation by achieving a sample size of 440 respondents. Once this number was reached, the researchers stopped accepting further responses through the online survey. The data collection spanned three months (i.e. from March to May 2021).

Measures

A multi-item questionnaire was employed in the collection of data. The questionnaire was in two sections. The first section covered the respondents' demographics. The second section focused on the learning environment, student engagement, COVID-19 risk perception, peer team learning, and learning satisfaction. The learning environment was measured using 10 items derived from the literature. Student engagement was measured using 15 items from Skinner et al. (2009) and Ladino Nocua et al. (2021). The COVID-19 risk perception measure with four items was adopted from Ding et al. (2020). A peer team learning questionnaire was adopted from Wells

(2013) with six main items. A four-item scale from van Damme et al. (2002) was used to measure learning satisfaction. Each measure employed a 5-point scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

Data Analysis

The data collected was processed using SPSS version 25, and Jeffreys' Amazing Statistics Program (JASP). The hypotheses were tested using the partial least square structural equation modelling (PLS-SEM) approach implemented by SmartPLS. PLS-SEM was used because of its robustness and as it is suitable for examining complex relationships among multiple variables (Hair et al., 2017; Rasoolimanesh et al., 2017). In this study, we employed both Cronbach's Alpha and composite reliability coefficients to assess the constructs' reliability (Akgül, 2019; Jennex, 2019; Salvendy & Smith, 2009). Further, average variance extracted (AVEs) and Heterotrait-Monotrait Ratio (HTMT) were used to examine the constructs' convergent and discriminant validities (Diamantopoulos & Siguaw, 2006; Henseler et al., 2015; Sarstedt et al., 2021). Thus, the structural model was tested following the establishment of an adequate measurement model (i.e., the reliability and validity of the measures).

RESULTS

Profile of Respondents

As revealed in Table 1, the majority of the respondents were females (58.6%). Thus, the ratio of females was larger than that of males; this distribution is not surprising given the respondents' industry setting. Because of the nature of the professions, the hospitality industry, like many others in the service sector, draws a large number of females in Ghana. Age-wise, 93.2% (410) were aged 21 to 30; 4.8% (21) were aged 31 to 40; 2% (9) were aged 41 and above. This means that the majority of the respondents were aged 21 to 30. In terms of level at the university, 1.8%

(8) were Level 100 students; 12% (53) were Level 200 students; 55.7% (245) were Level 300 students; and 30.5% (134) were Level 400 students. This means that the majority of the respondents were above Level 200.

Table 1: Profile of Respondents

Characteristic		Frequency	Percent
Gender	Male	182	41.4%
	Female	258	58.6%
	Total	440	100.0%
Age	21-30	410	93.2%
	31-40	21	4.8%
	41 and above	9	2.0%
	Total	440	100.0%
Level	Level 100	8	1.8%
	Level 200	53	12.0%
	Level 300	245	55.7%
	Level 400	134	30.5%
	Total	440	100.0%
Diagnosed	Yes	72	16.4%
	No	368	83.6%

Characteristic		Frequency	Percent
	Total	440	100.0%
Exposed	Yes	65	14.8%
	No	375	85.2%
	Total	440	100.0%

Measurement Model Assessment

The results in Table 2 show that all the items report significant loadings as desired (Akgül, 2019; Jennex, 2019; Salvendy & Smith, 2009). Further, the average variance extracted values (AVEs) are greater than the critical value (0.5) and all construct reliabilities are above 0.7 (see Table 3), demonstrating the adequate reliability and convergent validity of the measures (Diamantopoulos & Siguaw, 2006; Sarstedt et al., 2021). Thus, items with weak loadings were retained given the presence of adequate construct reliabilities and validities. Finally, the discriminant validity evaluation demonstrates that all of the HTMT values (see Table 4) are considerably lower than 0.90, thereby confirming the measures' discriminant validity (Henseler et al., 2015).

Table 2: Detailed Factor Loadings

| Latent | Indicator | Estimate | Std. Error | z-value | p | 95% Confidence Interval | | Standardized | | |
						Lower	Upper	All	LV	Endo
BEN1	BE1	1.000	0.000			1.000	1.000	0.906	1.147	0.906
	BE2	0.970	0.029	33.658	< .001	0.913	1.026	0.931	1.112	0.931
	BE3	0.919	0.031	29.448	< .001	0.858	0.980	0.887	1.054	0.887
	BE4	0.990	0.028	35.250	< .001	0.935	1.045	0.945	1.136	0.945
	BE5	1.023	0.029	35.664	< .001	0.966	1.079	0.948	1.173	0.948
CEN1	CE1	1.000	0.000			1.000	1.000	0.813	1.001	0.813
	CE2	0.982	0.046	21.161	< .001	0.891	1.073	0.839	0.983	0.839
	CE3	1.068	0.044	24.324	< .001	0.982	1.154	0.916	1.069	0.916
	CE4	1.076	0.045	24.053	< .001	0.988	1.164	0.910	1.077	0.910
	CE5	1.068	0.044	24.356	< .001	0.982	1.154	0.917	1.069	0.917
CRP1	RP1	1.000	0.000			1.000	1.000	0.539	0.698	0.539
	RP2	0.483	0.090	5.371	< .001	0.307	0.659	0.283	0.337	0.283
	RP3	0.724	0.099	7.280	< .001	0.529	0.919	0.404	0.505	0.404
	RP4	0.764	0.106	7.208	< .001	0.556	0.972	0.399	0.533	0.399
EEN1	EE1	1.000	0.000			1.000	1.000	0.849	1.002	0.849
	EE2	1.016	0.038	26.513	< .001	0.941	1.091	0.911	1.018	0.911
	EE3	0.971	0.042	22.921	< .001	0.888	1.054	0.842	0.973	0.842
	EE4	1.058	0.039	26.950	< .001	0.981	1.135	0.918	1.059	0.918
	EE5	1.091	0.042	26.042	< .001	1.009	1.173	0.903	1.093	0.903

| Latent | Indicator | Estimate | Std. Error | z-value | p | 95% Confidence Interval | | Standardized | | |
						Lower	Upper	All	LV	Endo
LEN1	LE1	1.000	0.000			1.000	1.000	0.789	0.980	0.789
	LE2	1.028	0.053	19.216	< .001	0.923	1.133	0.808	1.007	0.808
	LE3	0.599	0.059	10.070	< .001	0.483	0.716	0.468	0.587	0.468
	LE4	0.971	0.057	17.096	< .001	0.860	1.083	0.739	0.952	0.739
	LE5	1.046	0.052	20.208	< .001	0.945	1.148	0.839	1.025	0.839
	LE6	1.054	0.050	21.112	< .001	0.956	1.152	0.866	1.033	0.866
	LE7	1.071	0.050	21.220	< .001	0.972	1.170	0.869	1.050	0.869
	LE8	1.070	0.050	21.322	< .001	0.972	1.168	0.872	1.048	0.872
	LE9	1.104	0.051	21.692	< .001	1.004	1.203	0.882	1.081	0.882
	LE10	1.105	0.051	21.694	< .001	1.005	1.204	0.882	1.082	0.882
PLT1	PT1	1.000	0.000			1.000	1.000	0.877	1.087	0.877
	PT2	1.061	0.036	29.771	< .001	0.991	1.131	0.925	1.153	0.925
	PT3	1.016	0.035	28.734	< .001	0.946	1.085	0.911	1.104	0.911
	PT4	1.051	0.036	29.037	< .001	0.980	1.122	0.915	1.142	0.915
	PT5	1.026	0.037	27.949	< .001	0.954	1.098	0.900	1.115	0.900
SEN1	BEN1	1.000	0.000			1.000	1.000	0.907	0.907	0.907
	EEN1	0.919	0.044	20.954	< .001	0.833	1.005	0.955	0.955	0.955
	CEN1	0.880	0.047	18.876	< .001	0.789	0.971	0.915	0.915	0.915
SLS1	LS1	1.000	0.000			1.000	1.000	0.901	1.080	0.901
	LS2	0.990	0.031	31.834	< .001	0.929	1.051	0.928	1.070	0.928
	LS3	0.976	0.033	29.830	< .001	0.912	1.040	0.904	1.054	0.904
	LS4	0.921	0.037	25.031	< .001	0.849	0.993	0.838	0.995	0.838

Table 3: Reliability and Convergent Validity

Constructs	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Covid-19 Risk Perception	0.772	0.848	0.584
Learning Environment	0.948	0.956	0.688
Learning Satisfaction	0.941	0.958	0.850
Peer-Led Team Learning	0.958	0.967	0.855
Student Engagement	0.975	0.977	0.741

Table 4: Discriminant Validity using HTMT

Constructs	CRP	LEN	SLS	PLT	SEN
Covid-19 Risk Perception (CRP)					
Learning Environment (LEN)	0.542				
Learning Satisfaction (SLS)	0.369	0.604			
Peer-Led Team Learning (PLT)	0.413	0.574	0.824		
Student Engagement (SEN)	0.484	0.653	0.846	0.851	

Structural Model Assessment

The objective of this study is to examine the effect of COVID-19 risk perception on students' engagement, peer-led team learning, and learning satisfaction. The study further examined the effect of peer-led team learning on student engagement and student learning satisfaction; and then the effect of learning environment, peer-led team learning, and students' engagement on learning satisfaction. Consequently, eight hypotheses were tested. The structural model results were evaluated once the construct measurements were shown to be reliable, valid and significant. This procedure comprises evaluating the model's prediction capabilities as well as the association that exists between the research constructs (Hair et al., 2013). Figure 2 shows the general model with estimates of the relationships among the variables.

As depicted in Table 5, the model explains 72% of the variance in SEN ($Q^2 = 0.532$), 14.7% in PLT ($Q^2 = 0.122$) and 70% in SLS ($Q^2 = 0.593$). These demonstrate the adequate predictive power and relevance of the model (Hair et al., 2019; Usakli & Kucukergin, 2018). Based on the estimates of the coefficients, t-scores, and p-values as depicted in Table 5, CRP had significant positive influence on SEN (H1a: $\beta = 0.088$, $t = 2.393$, $p = 0.017$), and PLT (H1b: $\beta = 0.383$, $t = 9.020$, $p = 0.000$), but insignificant negative influence on SLS (H1c: $\beta = -0.056$, t = 1.643, p= 0.100); leading to the rejection of hypotheses H1a, H1b and H1c. PLT significantly positively influenced SEN (H2a: $\beta = 0.657$, $t = 16.791$, $p = 0.000$) and SLS (H2b: $\beta = 0.2358$, $t = 5.080$, $p = 0.000$); therefore, hypotheses H2a and H2b are supported. Similarly, SEN showed a significant positive influence on SLS (H3: $\beta = 0.474$, $t = 6.395$, $p = 0.000$), hence hypothesis H3 is supported. Lastly, LEN emerged to have a significant positive influence on SEN (H4: $\beta = 0.230$, $t = 5.018$, $p = .000$) and SLS (H5: $\beta = 0.104$, $t = 2.296$, $p = 0.023$); suggesting the acceptance of hypotheses H4 and H5.
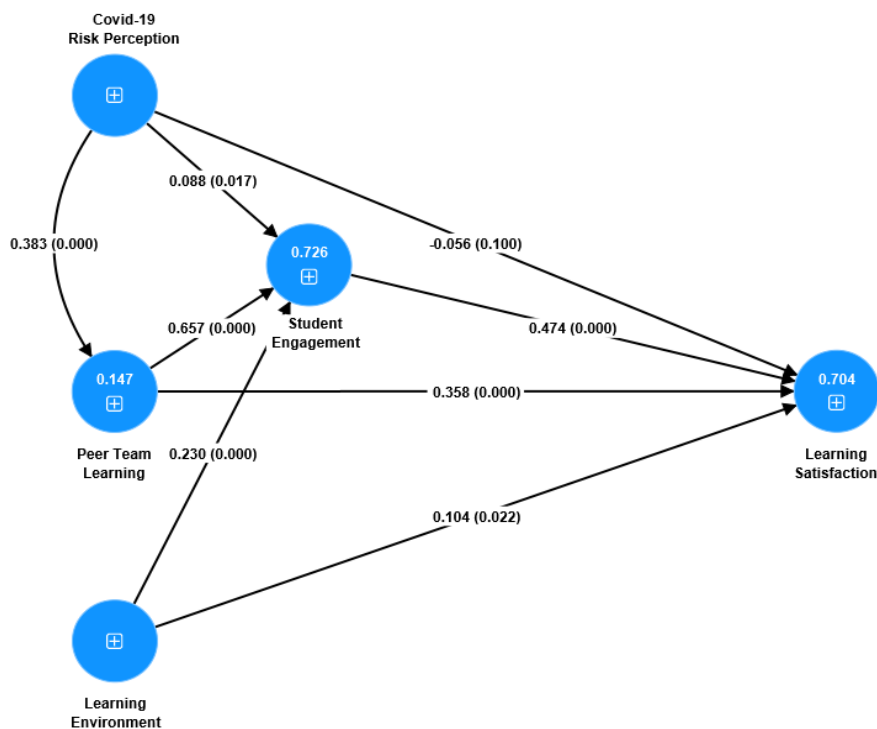

Figure 2: The General Model with Estimates

Table 5: Regression Coefficients

Predictor	Outcome	Estimate	Std. Error	t-value	p-value	95% Confidence Interval	
						Lower	Upper
CRP	SEN	0.088	0.037	2.393	0.017	0.023	0.166
CRP	PLT	0.383	0.042	9.020	0.000	0.290	0.459
CRP	SLS	-0.056	0.034	1.643	0.100	-0.129	0.007
PLT	SEN	0.657	0.039	16.791	0.000	0.577	0.732
PLT	SLS	0.358	0.071	5.080	0.000	0.225	0.503
SEN	SLS	0.474	0.074	6.395	0.000	0.323	0.612
LEN	SEN	0.230	0.046	5.018	0.000	0.132	0.315
LEN	SLS	0.104	0.045	2.296	0.022	0.019	0.198
Model's summary					R^2	R^2 Adjusted	Q^2
SEN					0.726	0.724	0.532
PLT					0.147	0.145	0.122
SLS					0.704	0.702	0.593

DISCUSSION

The study looked at the effect of CRP on SEN, PLT and SLS; the effect of PLT on SEN and SLS; the effect of SEN on SLS; and the effects of LEN on SEN and SLS. Subsequently, eight hypotheses were tested. The findings from the results as illustrated in Table 6 supported five out of the eight hypotheses.

Table 6: Summary of Hypotheses Test Results

Hypotheses	Structural Relationship	Coefficient	t-value	p-value	Decision
H1a	CRP --> SEN	0.088	2.393	0.017	Not supported
H1b	CRP --> PLT	0.383	9.020	0.000	Not supported
H1c	CRP --> SLS	-0.056	1.643	0.100	Not supported
H2a	PLT--> SEN	0.657	16.791	0.000	Supported
H2b	PLT --> SLS	0.358	5.080	0.000	Supported
H3	SEN --> SLS	0.474	6.395	0.000	Supported
H4	LEN --> SEN	0.230	5.018	0.000	Supported
H5	LEN --> SLS	0.104	2.296	0.022	Supported

Effect of CRP on SEN

This study found that COVID-19 risk perception has a significant positive effect on students' engagement. Thus, the higher the infection risk perception, the higher the engagement level.

Thus, H1a is statistically not supported. This finding corroborates Zhong et al.'s (2021) finding which established that student's engagement experience was positive despite the crisis. This finding also aligns with the social cognitive theory (Bandura, 1986),

which posits that personal factors, such as risk perception, can influence individual learning behaviours, including engagement. In this case, students who perceived a higher risk of COVID-19 were more likely to exhibit increased engagement in their studies, driven by their awareness of the potential consequences of the pandemic on their future prospects. This can be attributed to the fact that the study was conducted at a time when social distancing protocols had been relaxed with vaccination and other increased protection protocols. When confronted with novelty and uncertainty, an individual tends to make adjustments (e.g., in behaviour, emotion, and cognition) to adapt to the new environment. This switch in response is called adaption. Previous research has suggested that adaptation and academic emotions may interact to influence student engagement. Adaptability therefore enhances students' engagement amid the pandemic (Zhang et al., 2021). Adaptability is defined as the ability to productively adjust one's cognition, affect, and behaviour, indicating an individual difference in how one adapts to changing, new, and unknown environments (Martin et al., 2012). There are three components: cognitive adjustment, behavioural adjustment, and affective adjustment. Cognitive adjustment refers to changing one's thinking; behavioural adjustment refers to changing one's behaviours; and affective adjustment refers to changing one's affective reactions (Holliman et al., 2018; Martin et al., 2012). Martin et al. (2013) discovered that among high school students, a higher level of adaptability was strongly connected with both higher positive student involvement and lower negative student engagement. Prior studies have also discovered that the adaptability of first-year students was a major direct predictor of both positive and negative behavioural engagement (Collie et al., 2016; Holliman et al., 2018).

Influence of the CRP on PLT

This study found a significant positive effect of COVID-19 risk perception on peer-led team learning. This means that as infection risk perception increased, peer-led team learning also increased significantly, thus rejecting hypothesis H1b. This finding supports the SCT and SDT which emphasise the role of observational learning in acquiring knowledge, skills, and attitudes through interaction with and observation of others (Bandura, 1986). In this case, students who perceived a higher risk of COVID-19 were more likely to engage in peer team learning, allowing them to benefit from the collective intelligence, expertise, and experience of their peers in navigating the challenges of the pandemic. Further, the finding suggests that the students were cognisant of the potential long-term implications of the pandemic on their future careers and sought to adapt to the evolving situation. Again, adaptation is put forward as the reason for this anomaly. With the lifting of bans on gathering and COVID-19 prevention protocols in place, students still had contact. Meanwhile, the risk perception was not that high to trigger significantly less contact with colleagues. Also, even with the bans on gathering, the limit was up to 20; which means that 3 to 6 students could gather safely in a classroom for effective peer-led team learning in the face of the COVID-19 pandemic. Collaborative systems such as Slack and Zoom as well as social media platforms such as WhatsApp groups may assist peer learning by offering unique channels for questioning, idea sharing, and agile problem-solving help in response to specific requests, according to Walker et al. (2021). With the help of their peers, students who were less confident in their ability to complete their projects were able to learn from their peers to succeed.

Influence of CRP on SLS

This study found that COVID-19 risk perception has an insignificant negative effect on

hospitality students' learning satisfaction, thus not supporting hypothesis H1c. Despite the lack of statistical significance, the direction of the relationship (negative) suggests that as COVID-19 risk perceptions increase, there is a tendency, albeit not statistically significant, for students' learning satisfaction to decrease. This present finding aligns with the existing literature which suggests that the pandemic has had an impact on the psychological and physical well-being of students including life satisfaction (Cao et al., 2020; Huang et al., 2020; Liu et al., 2020; Özer et al., 2021). This finding suggests that students who perceived a higher risk associated with the virus were less satisfied with their learning experiences. The negative effect could be attributed to various factors, such as the increased stress and anxiety caused by the pandemic, the transition to remote learning, and the disruption of practical training and industry placements in the hospitality and tourism sector (Gray & DiLoreto, 2016; Korobova & Starobin, 2015; Ros et al., 2012; Wang & Fredricks, 2014).

Influence of PLT on SEN and SLS

Hypotheses H2a and H2b were supported by the findings as the results of our study emphasise the positive role of peer team learning in fostering students' engagement and students' learning satisfaction. This means that as peer team learning increases, students' engagement and learning satisfaction also increase. These findings corroborate the existing literature that suggests that peer team learning increases efficient collaboration and social connection among students, which promotes improved academic achievement. Indeed, peer team learning can benefit students by introducing them to issues that may not be fully covered in the curriculum (Tang et al., 2004) and peer teachers who facilitated small group tutorials in a problem-based curriculum were perceived as being more effective at offering feedback, empathising with student concerns, developing a better tutorial environment, and gaining support from students than faculty-mediated groups (Kassab et al., 2005).

Influence of LEN on SEN and SLS; SEN on SLS

As expected, hypotheses H3 H4 and H5 were rejected, underscoring the positive role of the learning environment in driving students' engagement and students' learning satisfaction as well as the positive bearing of students' engagement on learning satisfaction. These findings support the literature that suggests the physical environment of a school boosts students' learning capacities and academic achievement (Brooks, 2011) and effective student engagement adds greatly to the learner or student happiness and has a favourable impact on their academic attainment level (Korobova & Starobin, 2015; Ikhsan et al., 2019; Ros et al., 2012; Wang & Fredricks, 2014). Indeed, having an innovative and well-designed educational environment facilitates student-centred learning, equalises participation, and allows pupils to work with more peers than they would in typical classrooms (Gurzynski-Weiss et al., 2015). A happy student is a sure sign of a successful learning experience, and students' perceptions of their own learning outcomes are a reliable indicator of their own feelings of satisfaction with their educational experiences, whether they occur in person or online (Marks et al., 2005).

CONCLUSION AND IMPLICATIONS

The prime objective of this study was to examine the effect of COVID-19 risk perception given the learning environment, students' engagement, peer-led team learning and learning satisfaction among hospitality and tourism students in Ghana. The study demonstrated the effect of CRP on SEN, PLT and SLS; the effect of PLT on SEN and SLS; the effect of SEN on SLS; and the effects of LEN on SEN and SLS. COVID-19 risk perception proved to have an

insignificant impact on students' learning satisfaction, but significant positive influences on peer team learning and students' engagement. Vaccination, relaxed social distancing protocols and enhanced protective measures have eased adaptation and neutralised infection risk perceptions among students. Thus, student engagement levels have not been affected negatively. The study contributes to knowledge, theory and practice for ensuring students learning satisfaction, especially in times of pandemics such as COVID-19. Thus, in times of pandemics like COVID-19, social interaction is seriously affected; however, this study has revealed that with the right protocols, social interaction factors such as peer-led team learning, and students' engagement can be well managed to improve students' learning satisfaction.

Theoretical Implications

This study adds a fresh perspective to the ongoing discourse in the literature by clarifying hospitality and tourism students' risk perception given the learning environment, students' engagement, peer-led team learning and learning satisfaction among hospitality and tourism students in Ghana through the lens of SCT and SDT. Findings demonstrate that although risk perception significantly less triggers contact with colleagues, it does not necessarily discourage peer-led team learning and student engagement. The findings further accentuate the critical roles of peer-led team learning and learning environments in shaping students' engagement and learning satisfaction. Thus, the integration of social cognitive and self-determination theories in this study provides a more comprehensive understanding of the factors influencing learning experiences during the pandemic. By considering both the role of risk perception (as a personal factor) and the psychological needs of students (as proposed by self-determination theory), this study offers a holistic perspective on the determinants of student engagement, peer team learning, and learning satisfaction.

Practical Implications

The study's findings have implications for hospitality and tourism education. The education authorities should put in place measures to strengthen the information technology facilities of schools to support online teaching techniques. Since a lot of online teaching and less physical contact teaching has been the norm during this pandemic, the results indicate that a blend of the two would suffice for improving students' learning satisfaction. Educators and instructors should gradually increase the physical contact hours with students in order to be able to assess and help more with students' cognitive challenges. Considering students' engagement and peer team learning, universities should embrace collaborative learning which is an effective enhancer of involvement in learning activities. Students' engagement may be heightened when they work well with others (Wentzel, 2009), owing to a feeling of connection with others throughout the activities (Deci & Ryan, 2000). To make group work more effective, techniques to ensure that students understand how to communicate and behave in that context may be employed. Avoiding homogenous groups and grouping by ability, developing individual responsibility by assigning varied tasks, and assessing both the student and the group performance are all excellent ways to enhance collaborative learning.

Limitations of the Study

Like other studies, there are some limitations to this research. To begin with, the research was planned as a cross-sectional survey, which means that longitudinal investigations are required to corroborate the results. Second, since the survey was based on self-reports, there is likely to be some bias. Another drawback is that the findings may not apply to students at private universities since the research only included

hospitality management students at government-funded institutions. Future studies should consider how adaptation and anxiety moderate the effect of COVID-19 risk perception on students' learning

satisfaction within the context of the demographics of this study. This will enhance the understanding of the relationship among the variables understudied.

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