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Nomophobia and University Business Students' Burnout in Online Learning: Mediating effect of Fear of Missing Out

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ABSTRACT: During the COVID-19 shift to online education, challenges like internet disruptions and fear of missing out led to student burnout, particularly impacting learning outcomes. However, research on burnout in management or business education during this period is limited, despite extensive coverage of barriers in various fields. Few studies have explored the link between Nomophobia, FoMO, and burnout among students. Therefore, this study aims to assess student burnout's psychological aspects during COVID-19 online learning, focusing on Nomophobia and FoMO as predictors. The study employed a quantitative approach with 700 questionnaires distributed to business and management students in Nepal. From the collected responses, 355 reliable responses were used for analysis, which involved PLS-SEM techniques encompassing measurement models and path analysis. Students experienced moderate burnout in online classes during COVID-19, marked by exhaustion, cynicism, and reduced academic efficacy. They also showed increased Nomophobia and moderate concerns about fear of missing real-time class interactions. The study found a significant relationship between Nomophobia, FoMO, and SBO, where Nomophobia affects FoMO and SBO, while FoMO notably impacts SBO's academic efficacy. FoMO partially mediates the Nomophobia-SBO relationship. Gender doesn't moderate the relationship with SBO, indicating no distinction between male and female students. The study established the psychological impact of technology on student well-being in digital learning, highlighting the connection between Nomophobia, Fear of Missing Out, and Student Burnout, and suggests interventions for positive online engagement.

Keywords: nomophobia, fear of missing out, student burnout, covid-19, Nepal, business students.

I. INTRODUCTION

During the unexpected and sudden disruptions that occurred during COVID-19, both students and teachers altered their manner of instruction and learning to one that takes place online. It was characterized by the utilization of technological hardware and internet connectivity, reliance online learning is likely to discriminate against poor communities and poor countries [1], due to the limited or inadequate access to technology [2]. Several students experience confusion, difficulty, and often burnout due to the unexpected shift, which is experienced by most students. There were concerns raised about the accessibility of technology and the psychological impact on students as a result of the move to online teaching and learning, which was necessary. A loss of learning motivation, mental and physical exhaustion, and a tendency to depersonalize are all symptoms of academic burnout, which is caused by students' learning processes [3]. A rise in the amount of stress experienced by the students under investigation was observed when they transitioned to an online learning mode [4].

Due to the lockdown that began on March 24, 2020, and continued for six months, all in-person teaching and learning in Nepal came to a complete and total standstill. From 2020 to 2022, universities made online education available to students. In this day and age, when the new normal has been established, the blended method of learning is still being used without any difficulty in the delivery of the courses. Access to technology, mental health difficulties among pupils, and the quality of education are all challenges that are brought about by this. Outages of the internet, power outages, and a shortage of technological devices are among the challenges that students face [5].

Similarly, [6] observed that the digital transformation of instructional delivery was accompanied by several logistical obstacles as well as changes in attitude.

Amidst these challenges, students may encounter issues such as unreliable internet connectivity, internet outages, and inadequate facilities, which can result in them being unable to participate in online learning [7]. This situation can lead to a fear of missing out [8], a perception of being left out, and a compulsive need to maintain social relationships. The absence of synchronous online learning possibilities in online education might contribute to burnout. Prolonged learning exerts pressure on pupils, causing them to withdraw or not fully engage in the learning process. These consequences include physical or emotional fatigue, diminished academic performance, and a pessimistic outlook on studying [9].

There is a significant lack of knowledge regarding the extent to which the COVID-19 pandemic has an impact on the levels of learning, stress, and burnout that students experience. Studies on the impact of online learning on student burnout during the COVID-19 period, particularly in management and business education, have not been extensively covered in the literature. However, the majority of studies have focused on students in the fields of health and medical science [10, 11], students in STEM fields [12], barriers to the implementation of online and distant learning [13], technical issues, monetary issues [14], and other such topics. In a similar vein, [15] mentioned that the cost and accessibility of Internet services, in addition to various technical issues, have been highlighted as hurdles that hamper the achievement of students in online learning. During the COVID-19 epidemic, the majority of the literature concentrated on the learning outcomes of students, the variables that led to student burnout, and other related topics. Likewise, [16, 17, 18, 19, 20] were among the few studies that focused on management and business students.

It is possible for the terms 'fear of missing out' (FoMO), 'student burnout' (SBO), and 'the phobia of internet outages' (Nomophobia) to be related to one another. Additionally, these three terms may each contribute to the development of the other and exacerbate the other. SBO can be caused by a combination of Nomophobia and FoMO. Students who are connected to online learning sessions consistently are constantly connected to their teachers and classmates. If they are not connected to these sessions, they may experience feelings of being overwhelmed by the pressure of missing out and may lack focus on academic work and learning, which may lead to poor learning and performance, which in turn increases their level of burnout.

In addition, little is yet known about Nomophobia that has affected the management/ business students' FoMO and their SBO levels. The concept of FoMO has drawn considerable attention from researchers; however, past research has yet to study the link between FoMO with Nomophobia and SBO. The preceding discussion highlights the need to study the SBO in online learning and the relationship between Nomophobia, FoMO, and SBO among students during the COVID-19 pandemic and beyond. This study aims to evaluate the psychological aspect of student burnout during the COVID-19 pandemic online learning through predictors of Nomophobia and FoMO. Additionally, it ought to help build online and virtual classes with a system that is powered to improve student learning and reduce mental health issues, whether during the pandemic or beyond.

II. THEORETICAL BACKGROUND AND HYPOTHESES

Several base theories support the phenomenon of burnout perspective at the foundational level like the Conservation of Resources (COR) theory, Self-determination theory (SDT), and Attachment theory (AT).

1. *CONSERVATION OF RESOURCES (COR) THEORY*

This theory prominently describes burnout, stress, and trauma in the last two decades [21]. It focuses on the resource depletion caused by burnout. According to this theory, four distinct categories of resources can accurately predict levels of stress and optimal performance: objects, conditions, personal characteristics, and energies [21]. Person's loss or risk of losing their resources can be explained in three ways. First, stress occurs when resources are threatened, such as self-esteem from poor grades. Second, losing resources—like time to finish academic projects due to sports, work, or bad time management is stressful. Finally, investing resources and losing them, like studying but not improving GPA, causes stress [22].

2. *SELF-DETERMINATION THEORY (SDT)*

It has a relational perspective [23], autonomy, competence, and relatedness. The study differentiates between autonomous and controlled motivation in social situations [24] and examines the social and environmental factors that promote self-motivation and psychological well-being [23]. This theory is one of the foundations for

understanding the FoMO, which was discussed by [8]. Similarly, [25] mentioned that Self-determination theory has been utilized to forecast the occurrence of Fear of Missing Out (FoMO).

3. *ATTACHMENT THEORY (AT)*

This explains the emotional bonding and attachment of human beings. AT expands our understanding of how to work with adolescents affected by systems, regardless of their age [26]. The theory also presents the concepts of the majority of the time originating from changes in experiences with attachment figures and the preservation of these experiences in mental representations of self and others [27]. This theory has played an important role in advancing our knowledge of adult relationships as well as mental health.

4. *STUDENT'S ACADEMIC BURNOUT*

The concept of burnout, includes emotional exhaustion, cynicism, and diminished professional efficacy [28]. Burnout is characterized by emotional exhaustion and occupational cynicism. Burnout lowers professional efficacy due to poor self-evaluation of work [29]. According to [30], it is critical to examine burnout from viewpoints apart from those of occupational positions. Academic burnout is a syndrome characterized by extreme emotional exhaustion, decreased cognitive and emotional control, psychological detachment, melancholy mood, and non-specific symptoms [31], i.e., (i) emotional exhaustion, (ii) cynicism and (iii) academic inefficacy. Emotional exhaustion as a result of substantial study demands, cynicism as an expression of indifference to one's studies, and diminished professional efficacy as a manifestation of diminished faith in one's academic capabilities and talents.

5. *NOMOPHOBIA*

Nomophobia or 'no mobile phone phobia", refers to anxiety about being apart from the electronic devices that connect the user to the social world, such as smartphones [32]. This term has been used to explain pathological fear resulting in distress, anxiety, nervousness, and discomfort result due to the non-availability of mobile phones [33], anxiety in case of battery draining, phone loss, or no internet coverage [34]. When individuals forget to bring their electronic devices, the battery runs out and no network coverage then they tend to feel more nervous [35].

6. *FoMO*

Social media and digital platform addiction make people worry about missing and sharing information. This caused FoMO, especially in post-1990s generations [10]. FoMO has increased rapidly and developed into different field including education, psychology and management [36]. Similarly, [8] mentioned that Fear of Missing Out (FoMO) is a pervasive apprehension that others might be having rewarding social experiences from which one is absent. FoMO is caused by low satisfaction and unmet psychological needs, causes people to compare their lives. Competence, relatedness, and autonomy are key psychological requirements [37, 8].

7. *RELATIONSHIP OF NOMOPHOBIA AND FoMO*

Empirical studies carried out in the field of Nomophobia and FoMO have shown that there is a significant prediction between each of them. Studies like [25] in 235 participants, [38] among nursing students during the COVID-19 pandemic found a relationship between nomophobia, netlessphobia, and fear of missing out (FoMO). Similarly, Nomophobia and FoMO are associated with lower life satisfaction and negative moods [25]. [39] found that poor internet and residential amenities frustrated academics, impeding online instruction delivery. Unreliable internet, difficulties monitoring student development, inadequate engagement, restricted technological availability, and lack of remote teaching abilities were identified by [40]. These issues made students feel like they were missing out, which lowered their online learning desire during the COVID-19 pandemic.

8. *RELATIONSHIP OF NOMOPHOBIA AND SBO*

Nomophobia affects the individuals' performance and motivation toward academics during the learning process [41]. According to [42], the challenges that students face in the setting of higher education make them more sensitive to the symptoms of burnout. In the post-COVID-19 university education period, lack of laptops, cellphones, dependable internet services, energy etc. pose significant hurdles to an effective transition to online

education [43] and lead to Nomophobia among students. [44] mentioned a correlation between FoMO and both perceived COVID-19-related strain and problematic smartphone use among college students.

Similarly, studies like [45, 46, 47] have shown that internet connection is the prominent challenge in online learning and leads to Nomophobia which eventually impacts student motivation for learning. Unfortunately, this method of learning significantly affects students' physical and mental health, making them vulnerable [48], to depression, stress, anxiety, and burnout [49, 4], mental health challenges on students causing them to burnout [50], emotion- focused coping among students [51] and led to reduced student satisfaction [52] leading to burnout during online learning. The study conducted by [53] revealed a negative correlation between stress experienced during online learning and both the strategies used to cope with academic challenges and the act of seeking social assistance. Furthermore, academic optimism played a role in mediating these connections. Similarly, [54] pointed out that socially backward students and resource-limited institutions faced challenges in creating active engagement of students with online classes during COVID-19 which potentially hampered student's participation and academic performance.

9. *RELATIONSHIP OF FoMO AND SBO*

FoMO can cause anxiety [55], which reduces student participation. [56] mentioned relations of attachment anxiety and attachment avoidance, and elevated degrees of both personal and academic-related burnouts. The excessive use of unintegrated digital teaching and learning showed the academic burnout among the college students [57]. [58] highlighted that students' perception of online learning is framed around fear of isolation, academic success, health, and other academic-related experiences. During the COVID-19 pandemic, studies found an increase in the incidence of specific mental health conditions, such as signs of burnout among students [59, 60, 61, 62]. Similarly, [62] study shows increased student academic burnout across the period of COVID-19, and [59] mentioned mental health problems have increased.

If students are connected and supported by teachers during online learning, emotional engagement increases and fatigue decreases [63]. [64] found that anxiety of academic year loss is the main cause of psychological suffering during the COVID-19 epidemic in Bangladeshi college students. Online learning also causes student fatigue due to poor communication and isolation [65, 66]. People who have a high degree of FoMO are more vulnerable to mood disturbance, stress, fatigue, and poor psychological well-being [67]. Different empirical studies found that females had higher FoMO than males [25, 68, 69, 70]. Some empirical investigations reveal no association between gender and FoMO or nomophobia [71, 72, 73].

10. *THE MEDIATING EFFECT OF FoMO TO SBO*

COVID-19 has isolated students and educators, causing stress from social disruption and secluded learning. [74] found that a feeling of isolation from social interaction hurts the level of engagement of higher education students in online learning. The study conducted by [25] found a substantial correlation between Nomophobia (fear of being without a mobile phone) and FoMO (fear of missing out), indicating that these two phenomena are mutually predictive. Furthermore, this correlation has been shown to contribute to student burnout. The study conducted by [75] found that the intensity of problematic smartphone use, which negatively affects students' engagement during online learning, is influenced by FoMO as well as monotonous proneness, sadness, and anxiety. Problematic internet use can lead to feelings of isolation, affecting motivation and causing chronic psychological issues, including burnout during the COVID-19 pandemic [76]. [77] recognized that completely online learning faced technological, instructional, and social and affective issues relating to isolation and social distancing.

Likewise, [44] study confirms that FoMO plays a partially mediates in between perceived COVID-19- related restrictions and challenging smartphone use. It can be summarized that FoMO mediates the relations between Nomophobia and student burnout.

Based on above notes, the following hypotheses are formulated for the study:

H1. Nomophobia positively influence Fear of Missing Out (FoMO)

H2. Nomophobia positively influence Student Burnout (SBO)
H3. Fear of Missing Out (FoMO) positively influence Student Burnout (SBO)
H4. Fear of Missing Out (FoMO) mediates the relationship of Nomophobia and Student Burnout (SBO)
H5. Gender has no moderating effect on the relationship of Nomophobia, FoMO and SBO.

III. PROPOSED MODEL

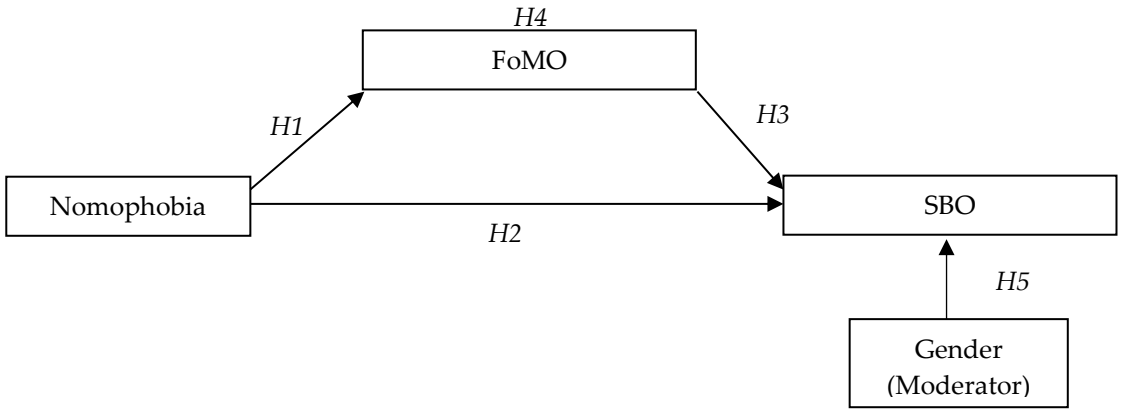

FIGURE 1. Conceptual framework for the study.

IV. METHODOLOGY

1. *DESIGN AND SAMPLE*

The study adopted a quantitative approach, and reached 700 management & business postgraduate degree and undergrad students in Nepal from different universities through an online questionnaire survey from November 2020 to January 2022. The students were located in all provinces of Nepal and the diversity of the devices and networks they used for attending the Synchronous virtual/online classes. Over three to four reminder invitations to 674 students, only 387 respondents responded. Following 387 responses, the survey was called off since the sample size was adequate for the study. The minimum sample size estimated was 262, using the Gpower 3.1 with effect size 0.05, 95% CI, 0.05 estimated error including 2 predictors. Finally, 355 responses were included for further analysis. The non-reliable (dropped) responses were identified with the respondents' missed right option to the two additional statements 'If you see a hash sign (#) in this statement select option 3'.

2. *INSTRUMENTATION*

The survey instrument was designed by modifying the statements of the 20-item Nomophobia Scale developed by [78] with four latent constructs with 17 items. The FoMO was measured with [9] items scale modifying 6 items by [8], 2 items by [79], and 1 item developed by the researcher for the fear of missing out on online classes. Likewise, Student Academic Burnout was measured with 15 items, three latent constructs of [9]. Similarly, one global item each for Nomophobia and Student Burnout was included in the questionnaire for second-order formative model assessment. All items were measured on a 7-point scale. The measurement scale used in the study is placed in Appendix 1.

3. *DATA NORMALITY, COMMON METHOD BIAS*

To evaluate the data's univariate and multivariate normality, Mardia's tests were conducted. The data did not meet the criteria for normality. Specifically, Mardia's multivariate skewness was 702.31 (p=0.001) and kurtosis was 3380.62 (p=0.001), both exceeding the normality thresholds of ±3 for skewness and ±2 for kurtosis, as per [80]. The significance of Mardia's coefficients (with critical ratios greater than 1.96) indicates that the data are not normally distributed.

This cross-sectional study used procedural remedies to prevent respondents from discussing the survey while filling out the forms. A comprehensive collinearity test utilizing a common dummy variable (married status) showed a Variance Inflation Factor (VIF) below 3.3, following [81] guideline [82]. To statistically analyze CMV, the Harman one-factor test was used [83]. Multiple variables with eigenvalues smaller than one explained 32.76% of the variation. Since the first component explained 32.76% of the variation, the data appear to be CMV-free.

4. MEASUREMENT, AND STRUCTURAL MODEL

The first-order measurement model and the second-order measurement model were analyzed, followed by the path analysis, to test the hypotheses. The measurement model was analyzed with factor loading, convergent validity, and discriminant validity. Thereafter, the structural model was analyzed for path analysis. This study employed SmartPLS 4.0 and SPSS 24v to analyze the data.

V. DATA ANALYSIS

1. MEASUREMENT MODEL ASSESSMENT

The item indicator loading, internal consistency reliability, and convergent and discriminant validity [84] were measured for the first-order construct. The item loadings below 0.5 [84] of the constructs were deleted, as such FoMO8=0.373, an item of FoMO construct has been dropped for further analysis. Likewise, the item NOMCONT1 was dropped due to its cross-loading in the subsequent two constructs. The items below 0.70 and above 0.60 loadings, were retained in the model, as composite reliability and the average variance extracted (AVE) are within the threshold value of 0.70 [84].

The result illustrates the internal consistency reliability, measured through Cronbach's Alpha, rhoA, and Composite Reliability were within the threshold of 0.70 [84]. The result of the internal consistency reliability is placed in Table 1. The convergent validity was measured with AVE values, and the minimum acceptable threshold of 0.50 [84] is shown in Table 1, however, the item FoMO7 with the lowest indicator loading of 0.643 was dropped from the analysis (AVE=0.494), to achieve the AVE above 0.5 (AVE=0.513). Next, the Fornell-Larcker criterion [85] and HTMT were achieved by the thresholds of F&L criteria and the HTMT0.85 [86]. The F&L criteria an HTMT are placed in Tables 2 & 3. In addition, the cross-loading is placed in the Appendix 2.

Table 1. Reliability and Convergent validity- first order model.

Construct	Items	Loading	CA	CR	AVE	VIF
Academic inefficacy (AI)	AI1	0.791	0.813	0.865	0.517	1.84
	AI2	0.766				1.706
	AI3	0.621				1.328
	AI4	0.689				1.406
	AI5	0.669				1.479
	AI6	0.764				1.688
Cynicism (CYN)	CYN1	0.863	0.874	0.914	0.726	3.897
	CYN2	0.88				4.222
	CYN3	0.857				2.266
	CYN4	0.807				1.882
Exhaustion (EX)	EX1	0.797	0.832	0.882	0.601	1.718
	EX2	0.676				1.367
	EX3	0.745				1.692
	EX4	0.796				2.178
	EX5	0.849				2.405

Fear of Missing Out (FoMO)	FoMO1	0.735	0.842	0.88	0.513	1.928
	FoMO2	0.742				1.75
	FoMO3	0.793				2.106
	FoMO4	0.707				1.474
	FoMO5	0.675				2.032
	FoMO6	0.648				1.962
	FoMO9	0.704				1.478
Not being able to access information (NOMAI)	NOMAI1	0.774	0.85	0.898	0.687	1.946
	NOMAI2	0.849				2.495
	NOMAI3	0.855				2.128
	NOMAI4	0.836				1.782
Not being able to communicate (NOMCOM)	NOMCOM1	0.891	0.934	0.95	0.791	3.26
	NOMCOM2	0.902				4.188
	NOMCOM3	0.918				4.792
	NOMCOM4	0.85				2.526
	NOMCOM5	0.885				3.114
Losing connectedness (NOMCONT)	NOMCONT1	0.708	0.882	0.915	0.683	1.489
	NOMCONT2	0.832				2.579
	NOMCONT3	0.881				3.188
	NOMCONT4	0.896				3.241
	NOMCONT5	0.802				1.95
Giving up convenience (NOMCONV)	NOMCONV1	0.874	0.817	0.89	0.73	1.994
	NOMCONV2	0.802				1.696
	NOMCONV3	0.884				1.827

Table 2. Discriminant validity- Fornell-Larcker criteria.

Variables	AI	CYN	EX	FoMO	NOMAI	NOMCOM	NOMCONT	NOMCONV
AI	0.719							
CYN	0.706	0.852						
EX	0.660	0.703	0.775					
FoMO	0.455	0.364	0.402	0.716				
NOMAI	0.284	0.251	0.284	0.516	0.829			
NOMCOM	0.329	0.202	0.320	0.654	0.601	0.889		
NOMCONT	0.349	0.209	0.330	0.556	0.469	0.718	0.827	
NOMCONV	0.324	0.232	0.270	0.581	0.711	0.682	0.508	0.854

Table 3. Discriminant validity – HTMT criterion.

Variables	AI	CYN	EX	FoMO	NOMAI	NOMCOM	NOMCONT	NOMCONV
AI								
CYN	0.834 (0.776, 0.885)							
EX	0.792 (0.719, 0.857)	0.825 (0.763, 0.878)						
FoMO	0.530 (0.418, 0.633)	0.416 (0.294, 0.529)	0.469 (0.342, 0.580)					
NOMAI	0.317 (0.223, 0.435)	0.281 (0.154, 0.410)	0.321 (0.203, 0.444)	0.593 (0.494, 0.684)				
NOMCOM	0.360 (0.249, 0.470)	0.222 (0.099, 0.347)	0.355 (0.233, 0.468)	0.727 (0.647, 0.800)	0.666 (0.575, 0.748)			
NOMCONT	0.397 (0.284, 0.504)	0.229 (0.118, 0.354)	0.373 (0.249, 0.491)	0.631 (0.534, 0.719)	0.537 (0.419, 0.644)	0.791 (0.725, 0.851)		
NOMCONV	0.371 (0.257, 0.501)	0.262 (0.151, 0.389)	0.312 (0.192, 0.440)	0.684 (0.594, 0.766)	0.841 (0.765, 0.908)	0.778 (0.702, 0.845)		

2. *ASSESSMENT OF SECOND-ORDER CONSTRUCT*

The second-order formative model assessment was employed with the two-stage approach. Convergent validity was measured with the redundancy analysis [87], with the global item of these two constructs separately [88, 89]. The correlation of the formative measured construct of Nomophobia with the global-item construct has a 0.977 value, and SBO with its global-item construct has a 0.972 value, which is within the threshold given by [84]. Similarly, the outer VIF values were lower than values of [90] for both constructs, showing no collinearity issues in the construct.

In the third step, indicator weights were assessed using bootstrapping with 10,000 samples [84]. Bootstrap confidence intervals were employed for significance testing, and the respective weights were found to be significant. The sample means for both constructs fell within the 2.5% to 97.5% confidence interval.

The NOMAI, the LoC of Nomophobia, and CYN, the LoC of SBO outer weight was not significant, however, the outer loading was significant. Hence, the formative construct of Nomophobia and SBO was accepted as a formative construct for further analysis. The result is shown in Table 4.

Table 4. Reliability and Convergent validity- second-order model.

HOC	LoC	Out weight and 95% CI	t-value	p-value	Outer loading	t-value	p-value	VIF	Redundancy
Formative [Nomophobia]	NOMAI	0.145 [-0.013; 0.307]	1.754	0.079	0.746 [0.645; 0.836]	15.053	0.001	2.134	Nomophobia -> Globalnomo
	NOMCOM	0.417 [0.165; 0.640]	3.402	0.001	0.929 [0.869; 0.971]	33.039	0.001	2.935	0.977 [0.973; 0.982]
	NOMCONT	0.327 [0.144; 0.532]	3.329	0.001	0.836 [0.748; 0.911]	19.422	0.001	2.073	p=0.001
	NOMCONV	0.277 [0.073; 0.468]	2.770	0.006	0.831 [0.743; 0.899]	20.35	0.001	2.545	
Formative [SBO]	AI	0.732 [0.446; 0.995]	5.181	0.001	0.951 [0.877; 0.996]	26.207	0.001	2.232	SBO -> GlobalSBO

	CYN	(0.106) [-0.475; 0.27]	0.558	0.577	0.724 [0.525; 0.873]	7.888	0.001	2.491	0.972 [0.966; 0.976]
	EX	0.445 [0.114; 0.741]	2.81	0.005	0.854 [0.722; 0.947]	14.076	0.001	2.214	p=0.001
Reflective	FoMO1				0.733	CA = 0.842 CR=0.88		1.928	
	FoMO2				0.739	AVE=0.513		1.750	
	FoMO3				0.790			2.106	
	FoMO4				0.706			1.474	
	FoMO5				0.677			2.032	
	FoMO6				0.648			1.962	
	FoMO9				0.710			1.478	

HoC-Higher Order Construct, LoC-Lower Order Construct.

3. *STATUS OF NOMOPHOBIA, FoMO, AND STUDENT BURNOUT OF ONLINE LEARNING DURING THE COVID-19 PERIOD*

Online learning during COVID-19 caused moderate emotional exhaustion, particularly at the end of virtual classes. Students reported moderate burnout, moderate cynicism, and moderately low academic inefficacy. They also reported moderately high Nomophobia, fearing detachment from electronic devices and internet connectivity. They also expressed moderate fear of disconnection and losing peer connection. Students also reported moderately high FoMO, fearing missing out on rewarding experiences. Overall, students experienced moderate burnout, moderate Nomophobia, and moderate FoMO across all dimensions. These findings highlight the challenges faced by students in adapting to online learning and managing virtual class challenges. Furthermore, the correlation results show that the SBO has a significant positive relationship with Nomophobia and FoMO. Wherein, FoMO has a higher correlation than that of Nomophobia towards SBO. Likewise, Nomophobia has a moderate relationship with FoMO, indicating that student burnout is connected with their FoMO and Nomophobia. The descriptive and correlation analysis is presented in Table 5.

Table 5. Descriptive and correlation analysis.

Variables	Mean	SD	Nomo	FoMo
Nomophobia	4.69	1.343		
FoMO	4.62	1.185	0.668**	
Student Burn Out	4.22	1.276	0.353**	0.411**

**. Correlation is significant at the 0.01 level (2-tailed).

4. *STRUCTURAL MODEL ASSESSMENT- HYPOTHESIS TESTING*

The final structural model of exogenous and endogenous variables was accessed and the indices are presented in Tables 6 & 7. There are two second-order constructs Nomophobia and SBO. The construct of SBO is an endogenous variable in the path. The structural inner VIF was assessed, and the value of VIF was found (1 to 1.921) less than the threshold of 3.3 [82], showing no collinearity issues. The path estimates test the hypothesis set for the study. The hypothesis testing and R^2 were calculated with 10000 sub-samples percentile bootstrapping one tail with CI 95% [84].

The coefficients of determination (R^2) show a value of 0.479, and 0.238 for FoMO and SBO respectively. The R^2 value ranged from 0.238 to 0.479 showing the values are moderate to weak and are acceptable [84]. Nomophobia and FoMO explain the 23.8% variance in SBO. Likewise, Nomophobia explains a variance of 47.9% in FoMO.

Similarly, f^2 of Nomophobia is 0.018 ($p>0.05$) showing almost no effect; f^2 of FoMO is 0.921 ($p<0.01$) showing a large effect. In the interpretation of f^2 values of 0.02, 0.15, and 0.35 represent small, medium, and large effects

respectively [91]. The results show that the FoMO has importantly explained the SBO. It indicates that FoMO is vital in the model to the variance of SBO. The goodness of fit criterion was investigated by the SRMR, the result shows a 0.065 value, within the threshold value of 0.08, and signifies the study's explanatory power [92, 93].

The path results revealed that Nomophobia significantly affects FoMO (β=0.692; t=22.396, p<0.01). Similarly, the results indicated that Nomophobia significantly affects SBO (β= -0.162; t=2.057, p<0.05). Additionally, results also indicated that there is a significant effect of FoMO on SBO (β=0.361; t=4.569; p<0.01). The path analysis shows that H1, H2, and H3 were supported.

Further, the specific indirect effect of FoMO has to occur that Nomophobia can lead to SBO (β= 0.25; t=4.530, p<0.01). So, considered for further mediation analysis.

Table 6. Hypothesis testing – path analysis.

Path	β	SE	t-value	p-value	CI (95%) LL	CI (95%) UL	Decision	f^2
					5.00%	95.00%		
Nomophobia -> FoMO	0.692	0.031	22.396	0.001	0.633	0.737	Supported	0.921 (p=0.001)
Nomophobia -> SBO	0.162	0.079	2.057	0.020	0.022	0.280	Supported	0.018 (p=0.180)
FoMO -> SBO	0.361	0.079	4.569	0.001	0.226	0.483	Supported	0.089 (p=0.020)
Nomophobia -> FoMO -> SBO (specific indirect effect)	0.25	0.055	4.530	0.001	0.156	0.337		

Table 7. Summary of model - R^2.

Endogenous	β	SE	t-value	p-value	CI LL 5.00%	CI UL 95.00%
FoMO	0.479	0.043	11.189	0.001	0.401	0.543
SBO	0.238	0.044	5.451	0.001	0.156	0.298

Additionally, the three dimensions of the SBO viz., AI, CYN, and EX path analysis presented in Table 8 shows that Nomophobia to AI (β=0.139; t=1.888, p>0.05), CYN (β=0.018; t=0.226, p>0.05) and EX (β=0.159; t=2.121, p>0.05) are insignificant. However, the specific indirect path of Nomophobia to SBO through FoMO is significant.

Further, the direct paths of FoMO to SBO dimensions are significant, AI (β=0.361; t=5.004, p<0.01), CYN (β=0.353; t=5.036, p<0.01), and EX (β=0.295; t=3.879, p<0.01). It signifies that FoMO affects AI more in comparison to CYN and EX.

Table 8. Hypothesis testing – path analysis to the dimension of SBO.

Path	β	SE	t-value	p-value	CI LL	CI UL
					2.50%	97.50%
Nomophobia -> AI	0.139	0.074	1.888	0.059	-0.018	0.271
Nomophobia -> CYN	0.018	0.079	0.226	0.821	-0.147	0.161
Nomophobia -> EX	0.159	0.075	2.121	0.034	-0.004	0.292
FoMO -> AI	0.361	0.072	5.004	0.001	0.217	0.499
FoMO -> CYN	0.353	0.07	5.036	0.001	0.214	0.486
FoMO -> EX	0.295	0.076	3.879	0.001	0.146	0.443
Nomophobia -> FoMO -> AI	0.248	0.050	4.927	0.001	0.150	0.348
Nomophobia -> FoMO -> EX	0.203	0.053	3.812	0.001	0.150	0.348
Nomophobia -> FoMO -> CYN	0.243	0.049	4.923	0.001	0.150	0.348

5. *MEDIATION EFFECT OF FoMO IN THE RELATIONSHIP OF NOMOPHOBIA AND SBO*

As the model involves three constructs, one at Nomophobia (exogenous variable), FoMO (mediating variable), and SBO (endogenous variable). The path of Nomophobia to SBO through FoMO was measured with VAF method to analyze the type of mediation. The VAF results indicate that FoMO accounted VAF of 0.60 in the model. The values of VAF within 60%, shows partial mediation [84, 94]. The VAF and the path show that the nature of the mediation is complementary mediation [95]. Therefore, it can be mentioned FoMO has a mediating role in between the Nomophobia and SBO. Hence, analysis shows that H4 is supported.

6. *MODERATING ROLE OF GENDER IN THE RELATIONSHIP OF NOMOPHOBIA, FoMO, AND SBO*

Further, it was investigated that the gender of the respondents moderates the path relationship of the model, i.e., the relationship of Nomophobia, FoMO, and SBO (entire model) was analyzed with the bootstrap multigroup analysis with 10000 sub-samples percentile bootstrapping one tail with CI 95% [84]. The model was run comparing the male (n=182) and female (n=173) in the category of gender, that is 'male' and 'female'. In the first step in this process, the actual data set was divided into categories, and the PLS bootstrap multigroup analysis (PLS-MGA) was applied to calculate the difference between the group in the model with the endogenous variable as SBO. The R^2 of the female group is 0.322 and the male group is 0.187. However, MGA results reveal that gender does not moderate the model relationship leading to SBO. Specifically, gender has no moderating effect in the model leading to SBO (Diff.=-0.08, p>0.05). Hence, analysis shows that H5 is supported. The path diff. is presented in Table 9.

Table 9. Bootstrap MGA result.

Path	diff.	t-value	p-value	CI LL 2.5% (female)	CI UL 97.5% (female)	CI LL 2.5% (male)	CI UL 97.5% (male)
FoMO -> SBO	-0.13	0.782	0.435	0.088	0.54	0.18	0.653
Nomophobia -> FoMO	0.026	0.41	0.682	0.591	0.776	0.569	0.749
Nomophobia -> SBO	-0.013	0.076	0.940	-0.153	0.334	-0.097	0.374
Nomophobia -> FoMO -> SBO	-0.08	0.678	0.499	0.062	0.389	0.127	0.455

VI. RESULT AND DISCUSSION

The purpose of the study was to examine the psychological aspect of student burnout during the COVID-19 pandemic online learning through predictors of Nomophobia and FoMO in Nepalese university business/management students. The study employed a cross-sectional quantitative approach with a valid response from 355 students. The study determined that students in the online learning environment during COVID-19 experienced a moderate level of academic burnout, as evidenced by an analysis of the three dimensions of student burnout. The students' moderate exhaustion, moderately high cynicism, and relatively low academic inefficacy indicated that they still perceived themselves as making meaningful contributions to virtual classrooms, despite the difficulties they encountered. The findings align with previous studies that have identified physical fatigue, mental fatigue, and sleep quality were weakened when psychological detachment was high [96]. Additionally, anxieties, uncertainty, solitude, academic performance, and other academic experiences have been found to shape online learning [58]. It has been observed that during this period of distance learning, students experienced low to moderate burnout, emotional tiredness, decreased cynicism, and reduced professional efficacy [61]. On the other hand, nursing students reported good mental and physical health with minimal stress [97]. However, studies by [59, 60, 61, 62] have indicated that student burnout and other mental health issues increased and got worse during the COVID-19 epidemic.

Similarly, the students in this study showed significant signs of Nomophobia, experiencing anxiety and fear of being without access to information during online lessons. Furthermore, the use of mobile devices and networking tools became somewhat less convenient during online lectures. Nevertheless, the ease of obtaining information through these gadgets encountered a minor decrease. Furthermore, students exhibited a moderate level of apprehension, unease, and distress when confronted with difficulties in accessing live video lectures. This discovery is consistent with previous research, which indicates that people tend to feel increased worry when they fail to carry their electronic devices, meet problems like low battery, or experience a lack of network

connectivity [35].

The observed connection between Nomophobia and psychological states is consistent with previous research that links Nomophobia to various psychological disorders, including anxiety, depression, stress, and sleep disorders [98, 99]. This underscores the influence of Nomophobia on students' mental well-being and highlights the need for considering psychological factors in the context of technology use during online learning.

The study additionally found some form of emotional detachment due to the inability to keep pace with the course in real-time, leading to concerns about missing opportunities to engage with live sessions. The findings suggested that the psychological prerequisites of competence, relatedness, and autonomy, as mentioned before, are crucial [37, 8]. In summary, the findings indicate that students encountered several challenges during their online learning experience, including burnout, social isolation, and fear of missing out.

Notably, the present study found a significant relationship between Nomophobia, FoMO, and SBO. Further, the study found that Nomophobia has a significant effect on FoMO, which was found to be higher among other relationships in the model. This finding aligns with earlier empirical research that has established a relationship between Nomophobia, FoMO, and Burnout among diverse student populations, such as nursing students [38] and students in general [25], during COVID-19 pandemic, where issues like poor internet connectivity and inadequate residential amenities were reported to have a frustrating impact on academic experiences [39, 40), likewise, [44] study conducted affirmed findings linking FoMO with both Perceived COVID-19-related strain and problematic smartphone use among college students. These findings highlight the strong connections between worries associated to technology, the fear of missing out, and the negative impact on academic performance arising from communicating online. This indicates a correlation between the extent of Nomophobia and FoMO and the prevalence of SBO.

Similarly, it was found that Nomophobia has an average effect on SBO, however, the indirect effect of Nomophobia on SBO through FoMO has a significant effect, which shows that Nomophobia can implicate the FoMO in the students while courses are delivered online synchronized and leads to student burnout. This finding is consistent with the previous literature findings connectivity to the internet was the biggest problem with online learning, and it can cause fear of the unknown, which makes students less motivated to learn [45, 46, 47]; way students learned had a big impact on their physical and mental health at every stage, leaving them open to harm [48], stress, anxiety and burnout [49, 4], online learning stress had negative effects on academic coping [53], resource constraints in online classes during COVID-19 have affected students participation and academic performance [54].

Remarkably, inconsistency in the present study found that Nomophobia has an insignificant direct effect on the individual dimensions of the SBO. The indirect effect of Nomophobia on dimensions of SBO through FoMO is significant. The non-significant direct paths from Nomophobia to AI, CYN, and EX suggest that, in isolation, Nomophobia may not have a direct impact on the SBO dimensions AI, CYN, EX. Nomophobia does not directly impact student burnout dimensions, the influence of FoMO suggests that interventions targeting the reduction of FoMO in online learning environments could be crucial in mitigating the adverse effects on student well-being and academic engagement. The anxiety of losing out on live conversations, real-time updates, and course-related activities is likely to increase sentiments of inadequacy in academic performance, cynicism towards the learning process, and general exhaustion among students.

On the other hand, the present study result shows a valuable insight that FoMO has a significant effect on SBO and its three dimensions, with a slightly greater effect on academic inefficacy. This suggests that FoMO plays a more direct role in shaping students' SBO in terms of AI, CYN, EX. Notably, the results indicate that FoMO has a stronger effect on the AI compared to CYN and EX. This finding is supported by the previous study findings that FoMO can cause anxiety [55], attachment anxiety and avoidance elevated degrees of academic-related burnouts [56], fear of isolation, academic success, health and other academic-related experience [58], shifting to online learning mode and experienced an increase in the stress level [4], anxiety of academic year loss causes SBO during COVID-19 epidemic [64]. Likewise, poor communication and isolation caused student fatigue [65, 66]; with a high level of FoMO were more likely to have mood swings, worry, fatigue, and poor mental health [63].

In the present study, it has been found that FoMO plays a significant role in explaining SBO in the framework of Nomophobia, FoMO, and SBO. This suggests that FoMO has a crucial role in explaining the variability of SBO. Nomophobia contributes to around 50% of the Fear of Missing Out (FoMO) phenomenon, and approximately 25%

of SBO can be attributed to Nomophobia and FoMO. Nomophobia exhibits slight impact, but FoMO has demonstrated a significant effect. This indicates that the SBO is driven by FoMO on information and the real- time nature of the course, which causes students to be concerned about losing opportunities to engage with courses in real time. Additionally, it detects that Nomophobia contributes to the FoMO, which in turn leads to the occurrence of SBO.

Subsequently, the study found that the FoMO partially mediates the relationship between Nomophobia and SBO, and the nature of the mediation is complementary mediation. That is, FoMO plays an essential role in the relationship between Nomophobia and SBO. The concept of complementary mediation implies that both Nomophobia and FoMO contribute uniquely to the overall mediation effect. The complementary nature of this mediation suggests that both Nomophobia and FoMO contribute distinctively to the overall pathway leading to SBO. It suggests that Nomophobia should induce FoMO in students, which in turn leads to SBO. This observation corroborates prior research. Like the study [25], found a significant mutual prediction between Nomophobia and FoMO, resulting in the SBO. Similarly, [76, 75] noted that feelings of boredom, depression, or anxiety can decrease students' engagement in online learning. However, FoMO can also mitigate these negative effects.

Additionally, the examination of the potential influence of gender on the association between Nomophobia, FoMO, and SBO outcomes indicated that gender does not have a moderating impact on the overall relationship that leads to SBO. In other words, the two genders in this study differ in terms of SBO. It indicates that the effects of technology anxiety and the fear of missing out on student burnout are identical, independent of gender. These findings contribute to a more comprehensive understanding of the nuanced factors influencing student well-being in online learning environments, emphasizing the importance of considering gender-neutral strategies in addressing student burnout. The findings support studies like [73, 71, 72] where studies revealed no association between gender and FoMO or Nomophobia or Burnout. However, it failed to support previous studies such as [69, 25, 68, 70] where it is mentioned that females had higher FoMO than males.

VII. CONCLUSION

In conclusion, psychological factors are crucial to student well-being in digital learning, especially given the sudden switch to online learning without preparation. Technology use and student mental health show how students feel about digital connectedness. Nomophobia's wider influence on students' mental health. It emphasizes psychological considerations while using technology for online learning. It's related to the Conservation of Resources (COR) theory mentions stress can result from losing resources, thus people must spend resources to defend against losses, recuperate, and obtain new resources. Self-determination theory makes protecting students' physical and psychological demands for independence, security, and inclusion even more important during a pandemic. Meeting these psychological needs is crucial for student motivation, engagement, and university connection. Attachment theory requires mental representations of self-others to preserve the experience. The study revealed a crucial link between Nomophobia, FoMO, and Student Burnout. Technology-related anxiety and the fear of being left out affect student burnout. Recognizing these relationships helps explain students' complicated experiences, especially during technology issues and global crises. This identification can help create targeted online engagement and well-being treatments. Understanding these complex relationships is essential to developing online learning strategies that boost student well-being and engagement.

VIII. PRACTICAL IMPLICATIONS

The results of this study offer significant perspectives that may be implemented in real-life situations. Institutions should prioritize the development of student mental health and well-being programs that specifically tackle the anxiety associated with online learning and blended learning. Implementing awareness campaigns might effectively enhance students' comprehension and ameliorate their anxiety about online and hybrid learning. The institutions can also organize seminars and workshops that teach students coping techniques for managing technology reliance and the fear of missing out, which are crucial for sustaining students' mental well-being. Similarly, educational institutions should give priority to enhancing online learning infrastructures, which encompass dependable internet connectivity and inclusive platforms for all students. Schools can mitigate the problems associated with Nomophobia and FoMO by tackling connectivity obstacles. Developing organized

timetables that incorporate both synchronous and asynchronous tasks can effectively address students' sense of social exclusion and reduce their academic ineffectiveness. Course designs can incorporate the option for students to engage with materials at their speed, allowing for easier adaptation during unpredictable circumstances. Additionally, encouraging peer interaction and collaboration can help alleviate feelings of isolation and loneliness, promoting a sense of connection among students. In addition, schools can provide faculty training specifically focused on developing the skills and tactics required to identify indicators of Student Burnout and Nomophobia. Educators can significantly contribute to the establishment of a nurturing learning environment by employing a variety of instructional approaches that give priority to the mental well-being of students. Given that the study found that Nomophobia and FoMO have a comparable effect on burnout regardless of gender, it is essential to implement solutions that are not exclusive to any one gender to tackle these problems. Interventions should be created to provide comprehensive support to all students, rather than focusing on certain demographic groups. In addition, legislators in the field of education should take into account these variables when formulating regulations and frameworks to more effectively meet the requirements of students in educational models that follow the pandemic or involve online/blended forms of instruction. By implementing the implications derived from this study, educational institutions can enhance the academic experience for students, leading to improved well-being and academic performance in the long run.

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Appendix 1: Measurement scale used for the study.

Student Burnout
Since the live virtual/online teaching and learning was started in lieu of physical classroom due to COVID-19 crisis in my institution….....
Exhaustion
I feel emotionally drained by my studies.
I feel used up at the end of a day of virtual classes.
I feel tired when I get up in the morning and I have to face another day of virtual classes.

Studying or attending a virtual class is really a strain for me.
I Feel burned out from my studies.
Cynicism
I have become less interested in my studies.
I have become less enthusiastic about my studies.
I've become more cynical (pessimistic) about the use of my studies.
I doubt the significance of my studies.
Academic Inefficacy
I can't solve the problems that arise in my studies.
I believe that I don't make an effective contribution to the virtual classes.
In my opinion, I am not a good student.
I don't feel stimulated when I reach my study goals.
I haven't learnt any interesting things during my studies.
During virtual class I don't feel confident that I am effective in getting things done.
If you see a hash sign (#) in this statement, select option 3 [this item is given for common method bias issue]
Nomophobia
During my live virtual /online classes if my internet connection is not stable or disconnected….....
Not being able to access information
I would feel uncomfortable without constant access to my internet network
I would be annoyed if I could not look information up on my smartphone or laptop
Being unable to get the information on my smartphone or laptop would make me nervous
I would be annoyed it will limit me to use my smartphone or laptop and/or its capabilities
Giving up convenience
If I were to run out of credits or hit my monthly data limit, I would panic
I would constantly check to see if I had a signal or could find a Wi-Fi network
If I could not use my smartphone or laptop, I would be afraid of getting stranded somewhere
Not being able to communicate
I would feel anxious because I could not instantly communicate with my professor/classmates
I would be worried because my professor/classmates could not reach me
I would be anxious because I could not keep in touch with my professor/classmates
I would be nervous because I could not know if someone had tried to get a hold of me
I would feel anxious because my constant connection to my professor/classmates would be broken
Losing connectedness
I would be nervous because I would be disconnected of my live virtual / online classes
If you see a hash sign (#) in this statement, select option 3[this item is given for common method bias issue]
I would be uncomfortable because I could not stay online during my live virtual / online classes
I would feel awkward because I could not check updates of live virtual / online classes
I would feel anxious because I could not check my messages of live virtual / online classes
I would feel weird because I would not know what to do during my live virtual / online classes
FOMO
If I miss my live virtual/online classes
I fear my classmates have more rewarding experiences and learning than me.
I get worried when I find out my classmates are having fun without me.
I get anxious when I don't know what my friends are up to learning than me.
Sometimes, I wonder if I spend too much time keeping up with what is going on.
It bothers me of being missed an opportunity to meet up with my classmates.
It bothers me of being miss out on a planned get-together.
It bothers me of being missed an opportunity to meet up with my Professor.
I would prefer to be updated on my course of study live rather than to receive the information later at a more convenient time.
I fear being the last to know about the course coverage delivered.

* The above statements were responded in 7 point Likert scale. 1= Strongly Disagree; 2=Somewhat Disagree; 3=Slightly Disagree; 4=Neither agree nor Disagree; 5=Slightly Agree; 6=Somewhat Agree; 7=Strongly Agree.

Appendix 2: Cross loading table

Items	AI	CYN	EX	FOMO	NOMAI	NOMCOM	NOMCONT	NOMCONV
AI1	0.791	0.608	0.544	0.378	0.225	0.307	0.317	0.28
AI2	0.766	0.575	0.553	0.353	0.273	0.306	0.331	0.25
AI3	0.621	0.348	0.311	0.265	0.039	0.106	0.188	0.08
AI4	0.689	0.406	0.436	0.338	0.228	0.226	0.24	0.288
AI5	0.669	0.551	0.462	0.235	0.132	0.126	0.186	0.179
AI6	0.764	0.541	0.509	0.362	0.27	0.282	0.21	0.272
CYN1	0.626	0.863	0.613	0.278	0.239	0.158	0.167	0.176
CYN2	0.615	0.88	0.631	0.293	0.209	0.145	0.134	0.159
CYN3	0.530	0.857	0.586	0.325	0.178	0.149	0.184	0.189
CYN4	0.637	0.807	0.568	0.337	0.231	0.233	0.221	0.26
EX1	0.517	0.549	0.797	0.358	0.227	0.308	0.289	0.262
EX2	0.306	0.359	0.676	0.317	0.17	0.289	0.265	0.212
EX3	0.514	0.538	0.745	0.271	0.173	0.153	0.211	0.152
EX4	0.561	0.612	0.796	0.257	0.232	0.201	0.191	0.168
EX5	0.650	0.662	0.849	0.334	0.284	0.261	0.296	0.231
FOMO1	0.366	0.246	0.300	0.735	0.376	0.413	0.394	0.448
FOMO2	0.332	0.287	0.288	0.742	0.361	0.371	0.341	0.434
FOMO3	0.389	0.303	0.332	0.793	0.41	0.509	0.420	0.463
FOMO4	0.378	0.302	0.344	0.707	0.381	0.519	0.471	0.438
FOMO5	0.230	0.193	0.210	0.675	0.328	0.449	0.307	0.368
FOMO6	0.223	0.213	0.249	0.648	0.264	0.367	0.282	0.320
FOMO9	0.316	0.255	0.265	0.704	0.433	0.607	0.514	0.415
NOMAI1	0.175	0.151	0.169	0.351	0.774	0.432	0.346	0.524
NOMAI2	0.176	0.163	0.177	0.416	0.849	0.472	0.387	0.559
NOMAI3	0.246	0.224	0.251	0.471	0.855	0.575	0.388	0.647
NOMAI4	0.313	0.267	0.310	0.452	0.836	0.495	0.422	0.608
NOMCOM1	0.293	0.192	0.335	0.579	0.591	0.891	0.602	0.684
NOMCOM2	0.278	0.163	0.260	0.572	0.466	0.902	0.667	0.551
NOMCOM3	0.292	0.179	0.299	0.564	0.519	0.918	0.617	0.575
NOMCOM4	0.309	0.213	0.279	0.566	0.537	0.850	0.674	0.599
NOMCOM5	0.287	0.152	0.246	0.622	0.551	0.885	0.633	0.619
NOMCONT1	0.229	0.109	0.220	0.493	0.417	0.707	0.708	0.500
NOMCONT2	0.233	0.122	0.221	0.401	0.333	0.490	0.832	0.348
NOMCONT3	0.302	0.178	0.294	0.458	0.415	0.597	0.881	0.414
NOMCONT4	0.277	0.165	0.276	0.489	0.428	0.628	0.896	0.446
NOMCONT5	0.375	0.263	0.330	0.447	0.339	0.538	0.802	0.387
NOMCONV1	0.280	0.215	0.210	0.489	0.650	0.600	0.454	0.874
NOMCONV2	0.190	0.116	0.177	0.421	0.543	0.544	0.402	0.802
NOMCONV3	0.336	0.242	0.288	0.561	0.621	0.602	0.444	0.884