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Conceptualizing blended learning models as a sustainable and inclusive educational approach: an organizational dynamics perspective

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Abstract

Purpose – The theoretical landscape surrounding the contribution of digital transformation to sustainability in higher education institutions is lacking in literature. Blended learning has gained popularity and poises for further growth as a sustainable and inclusive mode of learning that will shape the future of education. This study aims to investigate the organizational critical success factors that ensure high-quality blended learning opportunities.

Design/methodology/approach – Data was collected through an online student survey and semistructured interviews with academic leaders and faculty members.

Findings – Exploratory factor analysis and multiple linear regression revealed five main contributing factors to a successful overall hybrid experience, namely, faculty support, cognitive flexibility, learner self-actualization, student engagement and sense of belonging. In the results, students were satisfied with their gained skills, knowledge and engagement, and have succeeded in developing cognitive flexibility, self-actualization and sense of belonging. Faculty support was the strongest determinant. The presence of certain organizational dynamics, comprising management support of those with sustainability mindset, effective communication, blended leadership qualities and adequate faculty personality traits, presents as a major predictor to quality learning opportunities.

Originality/value – The theoretical landscape surrounding the contribution of digital transformation to sustainability in higher education institutions is lacking in literature, which emphasizes the novel aspects of this study. In particular, it contributes by determining the overall level of research on the subject, theoretical stances in this area and potential avenues for further investigation.

Keywords Blended learning, Education management, Community of inquiry, Sustainability, Leadership, UAE

Paper type Research paper



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Introduction

As nations move further into an increasingly digitized era, they actively seek ways to navigate the challenges presented by technological advancements while aligning with overarching goals like advancing sustainability and fostering inclusivity. Higher education institutions (HEIs) have a key responsibility regarding the sustainable development of society (Kräusche and Pilz, 2017), particularly in the education of future leaders and in the public awareness of sustainability (Amaral *et al.*, 2015). HEIs also represent a crucial stakeholder in the promotion and implementation of the United Nations (UN) Sustainable Development Goals (SDGs), which are the set of 17 goals, aimed to create for everyone by 2030 a better and a more sustainable future (Vallez *et al.*, 2022), and the digitalization of society by producing knowledge for new technologies and social innovation (Carayannis and Morawska-Jancelewicz, 2022). A pivotal aspect of the potential of emerging educational technologies lies in their capacity to digitally transform education and expand access to high-quality learning opportunities, particularly for disadvantaged groups and underrepresented minorities (Farley and Burbules, 2022; Shaya *et al.*, 2022). This aligns with the UN SDGs 4 (Quality Education) and 10 (Reduced Inequalities), inducing sustainability in education and reshaping universities as organizations that can ‘produce’ sustainable development.

In the United Arab Emirates, hybrid and blended learning (BL) have become increasingly prevalent in universities (Kumar, 2023), poising as a promising sustainable approach to education. In principle, both hybrid and BL involve online interactions. However, hybrid learning caters to both in-person and remote students simultaneously, whereas BL combines in-person and online learning activities. In this research, the term “blended” is preferred over “hybrid” when describing blended/hybrid learning, as “blended” suggests a more harmonious integration of methods compared to the more disparate connotation of “hybrid” (Osguthorpe and Graham, 2003). BL is characterized by the strategic combination of online and face-to-face teaching (Arnesen *et al.*, 2019), while a course is considered to be blended when part of its instructional sessions is conducted online, whereas the remaining hours are delivered via face-to-face sessions (Adams *et al.*, 2015). This growth in BL has been driven by technological advancements, a push for educational innovation and the challenges posed by the COVID-19 pandemic (Imran *et al.*, 2023), where universities had to reconsider and revamp its educational roadmap. The HE system required a swift shift from traditional face-to-face learning to an Emergency Remote Teaching (ERT), resulting in unplanned and temporary shift to online education and campus operations (Ahmed and Opoku, 2022). This mandated that both educators and learners develop digital literacy and competencies, and consistently use educational innovations (Halder *et al.*, 2024). Presently, several universities in the UAE offer BL options to accommodate a variety of student needs and aiming at advancing the national agenda on transforming the education system in light of the digital economy. For instance, one university has introduced a new hybrid education model tailored for working students. This model combines in-person and online education, catering to students who require a flexible schedule (Al Amir, 2023). Another university has collaborated with educational organizations to offer their MBA programs in a BL format, demonstrating commitment to innovative and accessible education (Al Ghurair Foundation, 2021). Thus, institutions are using the expertise and infrastructure developed during the COVID-19 pandemic to broaden access to educational opportunities.

Research shows that BL encompasses not only physical spaces but also a variety of digital, informational, social and conceptual spaces that are intertwined in the creation and use of a BL environment (Garrison and Kanuka, 2004). Such space diverges widely from the traditional classroom setting and as such requires a new set of pedagogical policies, practices, technological advancements and training for staff and students (Bøjer and Brøns, 2022). Digital

innovations have the power to enrich and transform education, accelerating progress toward SDG 4 for education and revolutionizing improved access to learning (UNICEF, 2024). This study aims to contribute to this area, where currently some universities in the UAE offer BL modes. By catering to a wide range of needs and circumstances, BL stands out as an inclusive and adaptable option in universities. This flexibility can be particularly beneficial for students with disabilities, those who have work or family commitments, and those living in remote areas where access to HE might otherwise be limited (Al Amir, 2023). BL approach as well supports diverse learning styles, as students can choose to review online resources at their own pace, revisit lectures and access materials tailored to different learning preferences. The online component in BL environments facilitates personalized learning experiences, enabling educators to provide targeted support and resources to meet individual student needs (Amesen *et al.*, 2019). Personalized learning engages students as co-creators in their education by offering choices and increased autonomy in shaping their learning experience (Amesen *et al.*, 2019).

In addition to, and along the line of inclusiveness, another emerging and urgent cornerstone in education in recent decades, especially in the face of an alarming climate situation, has been sustainability. This tenant, has taken shape through the UN SDGs in the education sector (McCowan, 2023), specifically SDG 4 and SDG 5, whereas SDG 10 covers the above inclusiveness aspect. Nonetheless, sustainability is still poorly adopted in the education sector, although it has been well established that HEIs can be successful conduits to apply principles and practices of SDGs, especially as they can be the transformational agents of the habits of their communities at large through their staff, students and their families (HESI, 2022). In addition, the theoretical landscape surrounding the contribution of digital transformation to sustainability in universities is lacking in literature (Trevisan *et al.*, 2023), which emphasizes the novel aspects of this study. In particular, its contribution is through determining the overall level of research on the subjects, theoretical stances in this area and potential avenues for further investigation. The commitment to promoting sustainable access and equity, in our perspective, stands as a paramount consideration in evaluating BL modes of delivery. Notably, not all students possess the skills, personality traits or academic background conducive to success in BL classrooms, while empirical studies have only begun to emerge (Raes *et al.*, 2020), with most of the existing research exploratory and qualitative in nature (Raes *et al.*, 2020). In fact, the majority of the few existing studies has mainly described students' experiences, such as motivation and engagement as predictors to blended learners' satisfaction (Xiao *et al.*, 2020), organizational implementation, such as cost-effectiveness models (Wang *et al.*, 2017) and technological design (Bülow, 2022). The literature around students' outcomes however is contradictory, with some studies confirming that flexible course delivery options have little to no negative impact on student learning (White *et al.*, 2010), others reveal that BL optimizes students' self-regulation and reflection and overall college students' learning outcomes (Zhang *et al.*, 2020). The COVID-19 pandemic has additionally brought achievement growth to light. Widening achievement gaps have been reported in multiple studies (Adams *et al.*, 2015; Goldhaber *et al.*, 2022), certifying the question "does technology increase learning?" As such, this paper expands the theoretical boundaries on how management of learning and education at the institutional level transforms to support the implementation of BL, theorizing a new understanding on the needed structures of organizational support. Key research questions are considered:

RQ1. What skills do students in HE gain via blended modes of delivery?

RQ2. How do the acquired skills correlate together?

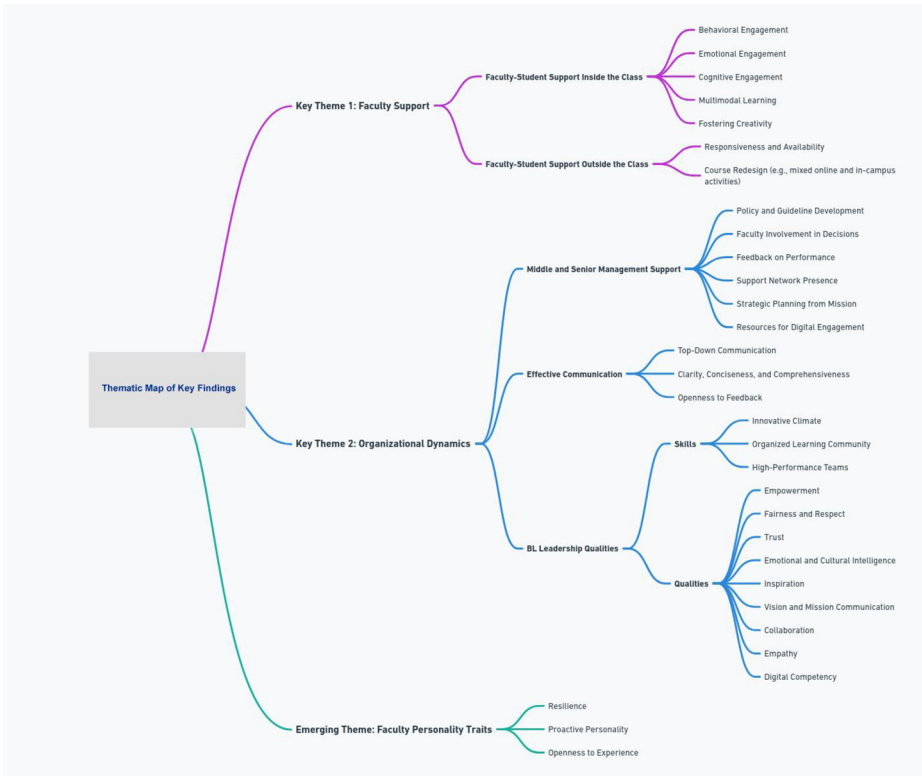
RQ3. How do the acquired skills affect the students' overall blended learning experience?

- RQ4. What kind of faculty practices prove to be highly supportive to students' growth and learning in blended modes?
- RQ5. What organizational-level factors do positively contribute to creating better outcomes in a BL environment?

Literature review and theoretical framework

Community of Inquiry framework and blended learning

Although empirical research on the effectiveness of online learning has recently exploded, creating, accepting and validating theoretical frameworks specific to the BL environment is still a work in progress. The Community of Inquiry (CoI) framework (see [Figure 1](#)) is a collaborative-constructivist process model based on John Dewey's educational philosophy and social constructivism that offers profound insights into producing meaningful learning experiences ([Garrison, 2017](#); [Jan et al., 2019](#); [Castellanos-Reyes, 2020](#)), and is distinguished as a means to examine the effectiveness of BL environments in HE. CoI model demonstrates that a rich learning experience can be created at the intersection of three main dimensions:



Source: Created by authors

Figure 1. Thematic mapping of the study

cognitive presence (CP), social presence (SP) and teaching presence (TP) (Garrison, 2017; Castellanos-Reyes, 2020; Krzyszkowska and Mavrommati, 2020). The dimensions are necessary, interdependent and provide a complete picture of the community's vibrant learning environment. The power of BL modes resides in the ability to facilitate CoI that provides the necessary conditions for unrestricted communication, dialogues, discussion, negotiations and consensus (Garrison and Kanuka, 2004). CP is defined as a cycle of practical inquiry in which participants intentionally move from understanding the problem or issue to exploration, integration and application (Garrison, 2017). SP is defined as the level of students' perceptions of their social and emotional relationships with one another in an online learning environment (Garrison and Arbaugh, 2007; Swan *et al.*, 2020). SP has been linked to student satisfaction, as well as perceived and actual learning (Hwang and Arbaugh, 2006). TP is defined as the delivery of a course from the perspectives of design, facilitation and learning guidelines for students to achieve the course learning outcomes (Akyol and Garrison, 2011). Strong leadership and a clear learning design structure have been shown to increase student engagement in collaborative settings. TP is viewed as a predictor of student satisfaction and perceived learning (Garrison and Arbaugh, 2007). The CoI framework has been used in numerous instructional design studies, either as a dominant theoretical framework or in combination with other e-learning design models (Krzyszkowska and Mavrommati, 2020) to validate and guide the design of blended courses with the goal of developing higher-order thinking skills. In this study, the CoI framework is used to investigate how SP, TP and CP contribute to skills acquired by HE students through blended delivery, specifically in the UAE context, and how these acquired skills correlate together to produce a meaningful BL experience. It is important to note here that the UAE provides a strong case study to investigate BL models within a sustainable educational approach for various reasons. For one, the UAE boasts advanced technological and financial capacities, ranking among the most high-tech nations in the MENA region and globally. As such, with the availability of the technological infrastructure, online and BL modes have been quickly adopted in the country (Puthiya *et al.*, 2023). In addition, the UAE has unveiled many governmental strategies and policies around sustainability such as the Green Agenda 2030 (UAE government, 2021), in which competitive knowledge economy is high priority and coordination between the Ministries of Climate Change and Environment and Education (whose vision is "sustainable innovative education") is encouraged, supported and ongoing. Moreover, while research exploring the association of BL with organizational and educational management is still nascent internationally (Fallah, 2012; Townsend, 2015), there is very little in the Gulf region generally and the UAE specifically, justifying further the need to shed light on the matter within this context. Our study is the first in this line of research for the UAE context, examining how acquired skills affect students' overall BL experience.

Organization development issues and prospects for effective blended learning

BL is influenced by course content and learning objectives, as well as student characteristics and learning preferences, teacher experience and teaching style and online resources (Dziuban *et al.*, 2018; Syafril, *et al.*, 2021). To embrace the coexistence and entanglement of multiple dimensions, the creation and use of a BL space necessitates the development and integration of new pedagogical practices, technological advancement and physical spaces that differ from traditional settings (Bøjer and Brøns, 2022). This implies that universities should provide faculty with adequate pedagogical and technological training and support. BL must align with institutional goals and priorities, which may create resistance to organizational change, that is further aggravated amid lack of organizational structure, and

limited collaboration or partnership experience (Vaughan, 2007). This study argues that BL mode requires redefining organization and management to prompt success. To date, there is no study that explored the organizational and education management issues associated with BL. Relevant research studies ignores the individual or organizational practices, experiences and implications of this (Fallah, 2012; Townsend, 2015). For instance, how does this combination of teaching and learning-specific factors to BL and other organizational attributes impact practices of faculty in doing their work, organization and management. This paper explores these questions, examining faculty work practices, organizational structures and managerial techniques in BL modes. Among the very few relevant studies, Garrison and Kanuka (2004) shed light on the front-end administrative and development concerns in BL. Firstly, one distinguishing feature of BL is the capacity to deliver interactive learning environments to sizable student populations in methods that are both affordable and accessible. The establishment of relevant policies and procedures necessary to enable BL techniques must therefore take a more formal approach. Planning is second and related to policy setting. Strategic and operational planning are the two key levels of planning required to create and maintain BL (Osguthorpe and Graham, 2003). Identification of requirements, objectives, prospective expenses and resource availability are all part of the strategic planning processes (Tabor, 2007; Narang, 2022). Third, regarding resources, BL requires clear evaluation of the resources required to establish and maintain success (Narang, 2022). Financial, human and technical resources initiate and support BL (Heterick and Twigg, 2003). Fourth, to master the course management system (Tabor, 2007), as well as situational, informational and institutional hurdles, providing support for both students and teaching staff is critical. Finally, for administrators, policymakers and professors of universities, BL poses complexities as a result of large and irreversible changes in societal demands, financial shortages, competitiveness, technological breakthroughs and student demographics. Narang (2022) argues that BL requires substantial transformation of management stream that would eventually build up the momentum in shaping the future of the students. Consequently, addressing these complexities requires uncommon and innovative approaches and action, and the management of the educational enterprise needs to be rethought.

Methodology

This research adopted a mixed-method approach, where two studies (*Study I and Study II*) were conducted as shown below. The sample included three universities (coded as University A, University B and University C), offering blended modes of delivery, that grant undergraduate and postgraduate degrees in two emirates in the UAE. These institutions have proven records in advancing sustainability, aligning with the UAE's Green Agenda 2030 that aims to 'achieve the goals of sustainable development in the UAE. The three universities were used in both Study I and Study II. The survey was hosted on Google Forms and data was collected exclusively within the UAE. Ethical approval for the study was obtained from the Institute Research Ethical Committee-IREC, ensuring adhering to ethical guidelines and code of ethics.

Study I – Quantitative

Study I aimed to answer RQ1, RQ2 and RQ3, with participants from undergraduate and postgraduate programs at these three universities engaged in blended learning. A convenience sampling approach was used, and data was collected via an online questionnaire to assess attitudes and behaviour (Babbie, 1990). The survey was administered over two semesters (Fall 2022–2023 and Spring 2022–2023) with 223 participants, as demonstrated in Table 1. The sample size of this study was calculated by using G*Power software. The BL

Table 1. Demographic characteristics

Demographic characteristics	University A	University B	University C
<i>Gender</i>			
Female	54 (47%)	47 (84%)	24 (46%)
Male	61 (53%)	9 (16%)	28 (54%)
<i>Age</i>			
17–24	115 (100%)	0 (0%)	24 (46%)
25–34	0 (0%)	47 (84%)	26 (50%)
35+	0 (0%)	9 (16%)	2 (4%)
<i>Nationality</i>			
Emirati	51 (44%)	0 (0%)	44 (85%)
Non-Emirati	64 (56%)	56 (100%)	8 (15%)
<i>Response rate</i>			
Target	150	80	100
Sample (N)	115 (77%)	56 (70%)	52 (52%)
<i>Rating of BL experience</i>			
Excellent	38 (33%)	12 (21%)	13 (25%)
Very good	51 (44%)	19 (34%)	12 (23%)
Good	26 (23%)	14 (25%)	18 (35%)
Satisfactory	0 (0%)	11 (20%)	9 (17%)

Source: Created by authors

experience was measured using 35 items adapted from the CoI framework, with Teaching and Cognitive Presence from [Arbaugh et al. \(2008\)](#) and [Shea and Bidjerano \(2014\)](#), and Social Presence from [Wang et al. \(2003\)](#). Data analysis involved Exploratory Factor Analysis (EFA) and Multiple Linear Regression (MLR).

Study II – qualitative

Study II involved qualitative interviews with BL experts, including faculty, department heads, deans, vice presidents and senior managers, to explore how faculty practices and organizational factors support student growth in BL, addressing RQ4 and RQ5. Snowball sampling was used, starting with personal networks and expanding through momentum ([Parker et al., 2019](#)). Interviews (40–60 mins) were conducted face-to-face and online during Summer 2023. The data was transcribed by a research assistant and analyzed thematically using [Braun and Clarke’s \(2006\)](#) framework, in which data was organized around major findings, with a detailed thematic map in [Figure 1](#). Sampling ended at saturation.

The final participant sample consisted of 27 individuals, and the demographic distribution is detailed in [Table 2](#).

Data analysis and results

Exploratory factor analysis results

Descriptive and inferential statistics, using SPSS, were performed to assess the skills acquired by participants through BL. EFA was conducted to identify related subsets of scale items and test factor loadings stability ([Hair et al., 2006](#)), using Principal Components extraction and Varimax rotation. EFA was applied with eigenvalues > 1.00 and cumulative variance >50%. Bartlett’s test and the KMO measure were checked for data suitability.

Table 2. Demographic characteristics – Study 2

Demographic category	Subcategory	No. of participants	%
Gender	Female	6	22
	Male	21	78
University A	Dean	1	4
	Faculty member	4	15
	Senior manager	1	4
	Head of department	1	4
	Dean	2	7
University B	Vice president	1	4
	Faculty member	3	11
	Senior manager	1	4
	Head of department	4	15
	Dean	2	7
University C	Faculty member	3	11
	Senior manager	1	3
	Head of department	3	11
	30–40 years	7	26
	40–50 years	14	52
Age	Over 50 years	6	22
	Master's degree	2	7
	PhD	25	93

Source: Created by authors

Convergent and discriminant validity were assessed, with Table 3 presenting convergent validity results (Hair *et al.*, 2010). In the first EFA iteration, all item communalities were above the 0.5 cutoff (Hair *et al.*, 2006).

Findings show that 5 variables were retrieved over the 35 items that accounted for 81.234%, exceeding the 50% cut-off. Variances were reported, ranging from $\sigma^2 = 23.833\%$ for factor 1 to $\sigma^2 = 10.532\%$ for factor 5. After evaluating the items loading, factor 1 was labeled Faculty Support, factor 2 as Cognitive Flexibility, factor 3 as Student Engagement, factor 4 as Learner Self-Actualization and factor 5 as Sense of Belonging. The Chi-square value of BTS was 9956.621, significant at 0.001 level (Williams *et al.*, 2012). The KMO was 0.947, exceeding 0.6 cut-off value. The items for each extracted factor align with the proposed constructs in this study. The rotated factor loadings for all items exceeded 0.50 threshold (Hair *et al.*, 2006). Eigen values of all constructs exceed the cut-off of 1. Cronbach's alpha values ranged from 0.924 to 0.971, exceeding 0.7 threshold.

Pearson correlation

Table 4 presents the Pearson correlations between the five new latent constructs from the EFA. The correlations of all five items were below 0.7 threshold, indicating sufficiency. Results show significant positive correlations between Cognitive Flexibility and Faculty Support, Student Engagement, Sense of Belonging and Learner Self-Actualization. Faculty Support also positively correlates with Student Engagement, Sense of Belonging and Learner Self-Actualization, while Student Engagement correlates with Learner Self-Actualization, and Sense of Belonging with Learner Self-Actualization. Overall, the Blended Learning Experience is significantly positively correlated with Faculty Support, Cognitive Flexibility, Learner Self-Actualization, Student Engagement and Sense of Belonging.

Table 3. Convergent validity and Cronbach's alpha

Construct	Item	Communalities	F2	F1	F3	F5	F4	Eigen Value	Variance (%)	Cronbach's alpha
Cognitive flexibility	CP1: Problem solving posed in lectures increased my interest in course issues	0.797	0.765					6.479	18.51	0.966
	CP2: Course activities stimulated my curiosity	0.841	0.775							
	CP3: I felt motivated to explore content-related questions	0.83	0.786							
	CP4: I used a variety of information sources to explore problems posed in this course	0.811	0.807							
	CP5: Brainstorming and finding relevant information helped me resolve content-related questions	0.841	0.759							
	CP6: Course discussions were valuable in helping me appreciate different perspectives	0.815	0.721							
	CP7: Combining new information helped me answer questions raised in course activities	0.832	0.724							
Faculty support	CP12: I can apply the knowledge created in this course to my work or other non-class related activities	0.787	0.712							0.971
	TP1: The instructor clearly communicated important course goals	0.863	0.834					8.342	23.833	
	TP2: The instructor provided clear instructions on how to participate in course learning activities	0.887	0.812							
	TP3: the instructor clearly communicated important due dates/ time frames for learning activities	0.838	0.816							
	TP4: The instructor was helpful in identifying areas of agreement and disagreement on course topics that helped me to learn	0.838	0.794							
	TP6: The instructor helped to keep course participants engaged and participating in productive dialogue	0.797	0.785							
	TP7: The instructor helped keep the course participants on task in a way that helped me to learn	0.793	0.781							
	TP12: The instructor provided feedback in a timely fashion	0.828	0.734							
	CP9: Reflection on course content and discussions helped me understand fundamental concepts in this class	0.714	0.732							

(continued)

Table 3. Continued

Construct	Item	Communalities	F2	F1	F3	F5	F4	Eigen Value	Variance (%)	Cronbach's alpha
Student engagement	TP5: The instructor was helpful in guiding the class toward understanding course topics in a way that helped me clarify my thinking	0.8		0.778						
	TP8: The instructor encouraged course participants to explore new concepts in this course	0.731		0.73						
	SP2: I was able to form certain impressions of some course participants	0.783			0.774			6.12	17.486	0.955
	SP6: I felt comfortable interacting with other course participants	0.698			0.736					
	SP7: I felt comfortable disagreeing with other course participants while still maintaining a sense of trust	0.818			0.783					
	SP8: I felt that my point of view was acknowledged by other course participants	0.892			0.803					
	SP3: Online communication within a class is an excellent medium for social interaction	0.833			0.801					
	SP4: I felt comfortable conversing through the online medium in courses	0.802			0.821					
	SP5: I felt comfortable participating in the course discussions	0.767			0.833					
	SP1: Getting to know other course participants gave me a sense of belonging in the course	0.729				0.668		3.805	10.872	0.924
Sense of belonging	SP9: Discussions in classes help me to develop a sense of collaboration	0.841				0.781				
	SP10: I enjoyed teamwork, and valued networking and collaboration	0.836				0.829				
	SP11: Even though we were not physically together in all lessons, I still felt like I was part of a group in the course	0.802				0.743				
	TP9: Instructor actions reinforced the development of a sense of community among course participants	0.717				0.597				
Learner Self-Actualization	TP10: The instructor helped to focus discussion on relevant issues in a way that helped me to learn	0.863					0.699	3.686	10.532	0.953

(continued)

Table 3. Continued

Construct	Item	Communalities	F2	F1	F3	F5	F4	Eigen Value	Variance (%)	Cronbach's alpha
	TP11: The instructor provided feedback that helped me understand my strengths and weaknesses relative to the course's goals and objectives	0.859					0.693			
	CP10: I can describe ways to test and apply the knowledge created in this course	0.863					0.727			
	CP11: I have developed solutions to course problems/exercises that can be applied in practice	0.865					0.682			
	CP8 Learning activities helped me construct explanations/solutions	0.82					0.771			
Source: Created by authors										

Table 4. Pearson correlations between all hypothesized variables

Component	Mean	SD	FS	CF	LSA	SE	SB	OBE
Faculty support	3.936	0.904	1					
Cognitive flexibility	3.878	0.937	0.717***	1				
Learner self-actualization	3.818	0.937	0.727***	0.750***	1			
Student engagement	3.614	0.929	0.590***	0.577***	0.590***	1		
Sense of belonging	3.593	0.907	0.609***	0.654***	0.586***	0.676***	1	
Overall blended learning experience (OBE)	3.90	0.905	0.851***	0.842***	0.829***	0.730***	0.731***	1

Notes: $N = 223$; SD = standard deviation; All constructs have five-point Likert scale: 1 = Strongly disagree, 5 = Strongly agree; ^aStandardized correlations reported; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Source: Created by authors

Multiple linear regression analysis

MLR was conducted to examine the relationship between acquired skills and Overall Blended Learning Experience, as well as to assess causal effects. Table 5 presents MLR results for testing linearity and multicollinearity to predict the Overall Blended Learning Experience.

Multiple R (0.947) reflects the correlation between Overall Blended Learning Experience and the weighted sum of predictors. R^2 exceeded the criterion (Quaddus and Hofmeyer, 2007), with the 5 predictors explaining 89.7% of the variability. The adjusted R^2 (0.894) accounts for error variance. The regression's standard error was lower than that of the dependent variable, indicating more accurate results than the null model. The F -statistic from ANOVA is significant at the 0.001 level, confirming that the regression model is preferred over the null model. The results show statistically significant linear relationships between Overall Blended Learning Experience and the 5 constructs, suitable for regression analysis. All independent variables had tolerance values above 0.10, VIF values below 10 threshold (Hair *et al.*, 2006) and condition index values below 30 (Hair *et al.*, 1998), indicating no multicollinearity (Hair *et al.*, 2006). The beta weights of all five predictors were significant at the 0.001 level, with Faculty Support having the strongest impact on Overall Blended Learning Experience, followed by Cognitive Flexibility, Learner Self-Actualization, Student Engagement and Sense of Belonging (see Figure 2).

Qualitative findings

This section presents the findings of the interview data analysis, describing the two key themes, subthemes and emerging themes that have been identified under the subheadings.

Key theme 1: Faculty Support

Faculty ascertained the instrumental role of the teaching practices they use and other efforts, presented as key support, to facilitate student learning in blended mode and overall success of BL. Consequently, two sub-themes emerged, namely, (1) faculty–student support inside the class and (2) faculty–student support outside the class.

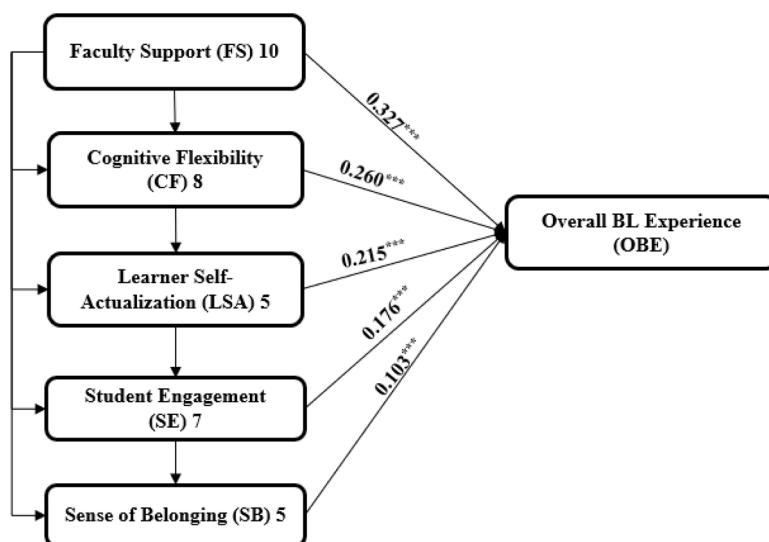
Subtheme 1: Faculty–student support inside the class. Faculty indicated that their practices inside the class were mainly focused toward student engagement, while supporting students through behavioral engagement; emotional engagement, cognitive engagement, engaging students in multimodal learning and fostering creativity. Four of the faculty interviewees commented: “I know that students’ behavioral engagement is important for

Table 5. Multiple linear regression (MLR) to predict overall blended learning experience (OBE)

Model summary	Multiple R	R ²	Adjusted R ²	Std. error	SD
ANOVA	0.947	0.897	0.894	0.294	0.905
Regression	Sum of squares	Df	Mean square	F	P
Residual	163.121	5	32.624	376.595***	0.000
Total	18.799	217	0.087		
	181.919	222			
Linearity	Sum of squares	Df	Mean square	F	P
Cognitive flexibility	129.011	1	129.011	664.841***	0.000
Faculty support	131.731	1	131.731	698.525***	0.000
Student engagement	96.907	1	96.907	359.747***	0.000
Sense of belonging	97.235	1	97.235	284.230***	0.000
Learner self-actualization	125.033	1	125.033	505.894***	0.000
Coefficient and multicollinearity	B	Std. Error	Beta (β)	t	P
Constant	-0.218	0.095		-2.288	0.023
Faculty support	0.327	0.036	0.326***	9.201	0.000
Cognitive flexibility	0.260	0.036	0.269***	7.176	0.000
Learner self-actualization	0.215	0.036	0.222***	6.038	0.000
Student engagement	0.176	0.031	0.181***	5.714	0.000
Sense of belonging	0.103	0.033	0.103**	3.105	0.002
				Tolerance	VIF
					CI
					1
					13.243
					12.661
					20.825
					16.522
					19.53

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ DF = degree of freedom; B = unstandardized coefficient; Beta = standardized coefficients; VIF = variance inflation factor; CI = condition index

Source: Created by authors



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Figure 2. Model of findings and regression results

academic performance, thus, I relied mainly on active learning strategies to ensure that they are heavily engaged. (Faculty Member 2-University A).”

Subtheme 2: Faculty–student support outside the class. Interviews with faculty revealed that extensive efforts were placed outside the class that made BL a success. These efforts focused on being responsive and available for students; and redesigning courses. E.g., as faculty interviewees commented “we worked hard to redesigning our courses, through learning activities that provide combination of online and in-campus activities, along with placing minor emphasis on quizzes. (Faculty Member 8-University C)”

Key theme 2: organizational dynamics

Interviewees suggested that the institutions’ organizational dynamics, seen as a multi-dimensional BL environment, facilitated the successful transformation of the educational framework and the development of competent faculty and students, enriching the BL experience. These dynamics were characterized as a continuous process of performance enhancement through appropriate leadership, management and strategies. Three sub-themes emerged from the analysis.

Subtheme 1: Middle and senior management support. Interviewees emphasized the crucial role of middle and senior management in the success of BL, especially during the transition from online to BL. Managerial support included clear policy communication, faculty involvement in decision-making, constructive feedback, support networks and strategic planning aligned with the institution’s mission and resources to enhance faculty engagement in the digital environment.

Subtheme 2: Effective communication. Participants demonstrated the importance of effective communication at the level of senior leadership – middle management and faculty – middle management. This communication was characterized by top-down approach, clarity,

conciseness, comprehensiveness and open for feedback and suggestions. One Dean commented: “I think that it is not necessarily our communication is always at the level of top-down model, it could be sometimes bottom-up, but with blended modes instructions need to be clear to avoid confusion. (Dean 3-University B).”

Subtheme 3: Blended learning leadership qualities. Interviewees noted that effective BL leadership, with key attributes, made adapting to BL easier. Successful BL leaders should foster innovation, create organized learning communities and build high-performance teams. Leadership qualities identified included empowerment, fairness, trust, emotional and cultural intelligence, inspiration, clear communication of vision, collaboration, empathy and digital competence. In line with the quantitative findings on faculty support, a new theme emerged: Faculty Personality Traits, to deepen understanding of faculty-student support in BL.

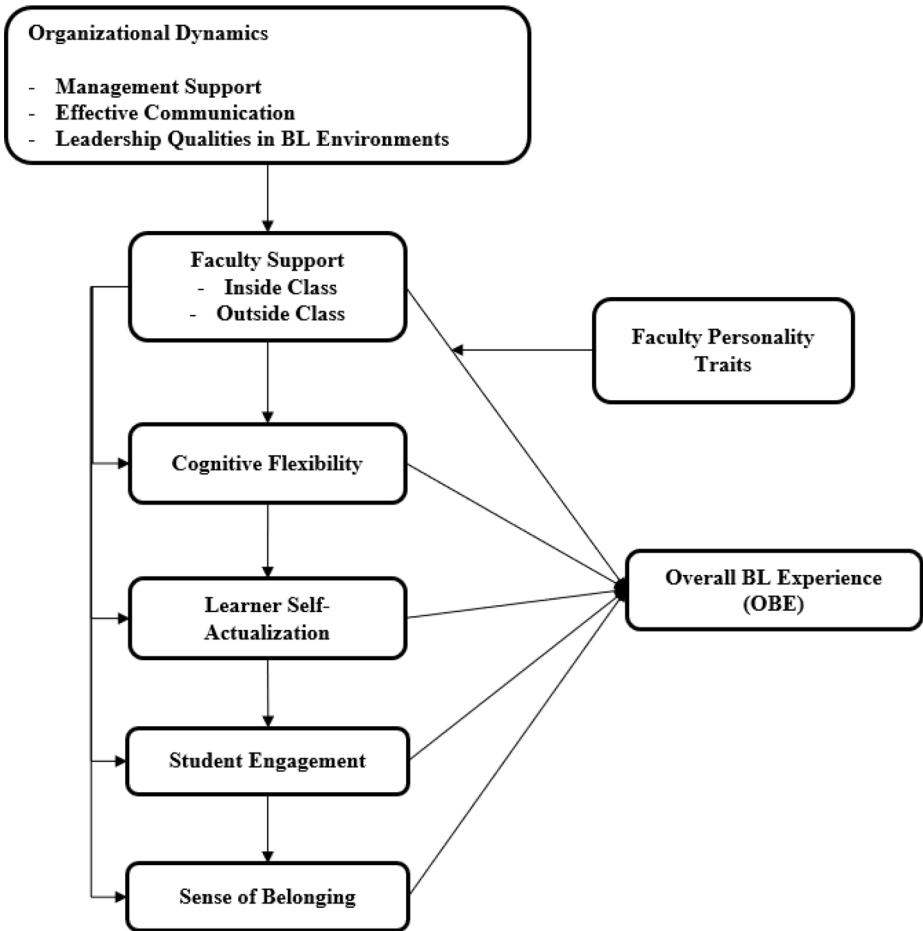
Emerging theme: faculty personality traits. First, faculty confirmed all of the five factors that proved to be quantitatively determining BL experience. Interviewees reflected on additional factors that came into the interplay of faculty and BL experience, while considered as critical for the smooth delivery of BL. In that sense, FPT were perceived as a moderator that can either strengthen the influence of Faculty support on blended experience or reduce it. Faculty interviewees identified a number of personal traits and characteristics, in the specific context of facilitating BL delivery, namely, resilience, proactive personality and openness to experience.

Discussion of findings

Integrating quantitative and qualitative findings led to the final study model (Figure 3). Key organizational dynamics – management support, effective communication and strong blended leadership – were major predictors of high faculty-student interactions, both in and out of class. The strongest determinant of the overall BL experience was Faculty Support, followed by Cognitive Flexibility, Learner Self-Actualization and Student Engagement. Faculty Support, highly rated and significantly correlated with other factors, plays a pivotal role. The Faculty Support–BL experience relationship is strengthened by favorable faculty personality traits, such as resilience, a proactive personality and openness to experience.

Results show that students improved in Cognitive Flexibility, Self-Actualization and Sense of Belonging, and were satisfied with the skills, knowledge and engagement gained. These findings align with regional (Bøjer and Brøns, 2022) and international studies (Swan *et al.*, 2020; Vázquez-Sánchez *et al.*, 2021) on the benefits of BL. Consistent with previous research on Cognitive Flexibility’s role in the successful transition to BL and its impact on satisfaction, learning and community (Garrison and Arbaugh, 2007; Vázquez-Sánchez *et al.*, 2021), Faculty Support emerged as the strongest predictor of the Overall BL Experience. Mumford and Dikilitaş (2020) argued that faculty interactions, both inside and outside the classroom, improve student engagement, motivation and perseverance, impacting factors like student engagement, sense of belonging (Wang, 2009), learner self-actualization, faculty support and cognitive flexibility (Geng *et al.*, 2020). Faculty Support, as highlighted in this study, plays a key role in students’ overall learning (Chen *et al.*, 2019; Almasi and Chang, 2020). However, unlike previous research (Garrison, 2017), Sense of Belonging received the lowest rating, likely due to the context, perceived targets and individual needs, emotions and experiences of the perceiver.

Students may have differing perspectives on the course (Almasi and Chang, 2020; Mumford and Dikilitaş, 2020), with some being more passive or struggling with time management, while others take ownership and use technology effectively (Vaughan, 2007). This study finds that sense of belonging is influenced by faculty support, cognitive flexibility, student engagement and learner self-actualization. The low rating for Sense of Belonging,



Source: Created by authors

Figure 3. Final study model

compared to international research, raises questions about the influence of cultural factors in Emirati society on this aspect of the BL experience. This warrants further exploration. All of these factors align with SDG 4 and SDG 10, as universities play a key role in advancing SDGs through their communities. BL supports fostering the UAE's vision for a flexible, resilient education system and a digitally driven economy, while addressing diverse student needs.

Summary and conclusions

This study is grounded in the belief that BL has the potential to transform the education system in the UAE, despite being relatively new and under-researched. By combining in-person and online methods, BL enhances education quality, offers engaging learning experiences and broadens

access to tertiary education. This inclusive approach supports SDGs 4, 5 and 10, promoting equitable access to education and lifelong learning opportunities for all. The UAE experience is effective, with strong institutional support systems in place. By highlighting Faculty Support as key to students' overall blended learning experience, this paper aligns the UAE educational context with emerging international findings. The importance of faculty support underscores the role of organizational dynamics and faculty personality traits, suggesting a need to explore the country's educational management culture. With the UAE's political setting focused on sustainable education, BL offers an inclusive approach that redefines HEIs to be learner-centered, addressing fiscal and pedagogical challenges. This research is valuable for its novelty and practical implications, emphasizing the central role of faculty. Continuous pedagogical support for faculty is essential, and research into these areas in the UAE's education sector is needed. Professional development should focus on teaching methods that enhance students' self-directedness and self-actualization while offering a global perspective. This can be achieved by addressing pedagogical beliefs, encouraging experimentation with new technologies, planning reflection sessions and prompting faculty to assess courses from students' perspectives. These initiatives must align with the local Emirati and Gulf cultural context to be effective. Second, administratively, the transformation of HEIs toward more advanced approaches is inevitable. Management can optimize this transformation by fostering a trust-based organizational culture that encourages experience sharing, creating opportunities for technological experimentation (e.g., innovation labs, BL boot camps), investing in leadership development for BL and disseminating best practices and toolkits that demonstrate how technology supports learning. This aligns with the UAE's strategic vision, such as the Green Agenda 2030. Third, from students' perspectives, learner self-actualization is crucial for enhancing engagement and the online component of blended learning. While students were satisfied, personal maturation, experiences and motivation impact learning success. It is recommended to intervene in addressing procrastination in the online component of BL and fostering self-regulation through online social identity groupings. A limitation of this study is the use of expert interviews, which, although valuable for uncovering insider knowledge, suggests the need for quantitative examination of contextual factors driving blended learning success. Future research could examine whether findings can be generalized into other Arab countries and reexamine the relationships, as the UAE ranks as the most high-tech country in the MENA region. In addition, this study has revealed the critical role played by the organizational dynamics on driving successful blended experience. Further research could explore how these attributes enhance student achievement and meaningful learning. Faculty support, a key driver of blended learning success, highlights the need for continued improvement in this area.

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Further reading

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