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Reflections on adopting SAMR model for technology integration at University level: A phenomenological study from Pakistan

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ABSTRACT

This study aimed to explore the technology integration competencies of university teachers with reference to the Substitution, Augmentation, Modification and Redefinition (SAMR) model. The objectives of the study were (i) to explore the motivation level, (ii) to investigate the inspiration level, and (iii) to diagnose the retention level of Pakistani teachers in adopting the SAMR model for effective blended learning practices. The research context included a random selection of 340 teachers from four faculties of two public sector universities in Punjab, Pakistan. The mixed method approach was used to obtain and evaluate the study data. Both quantitative and qualitative approaches were used for data collection, and a self-constructed questionnaire and semi-structured interview were used to obtain teachers' perceptions. Research findings state that teachers' motivation level was higher as compared to inspiration and retention level. The teachers were motivated only to substitute/augment technological trends in the teaching-learning trajectory, but the attainment of modification/redefinition phases for task creation through the latest technological tools has yet to be achieved. The study recommended that university management may provide extra computing infrastructure and budgetary heads, and incentives for technology incorporation. Training and awareness seminars on the latest Web 2.0 technologies can inspire the faculty to become double talented for modification and redefinition of blended learning practices.

Keywords: *SAMR model; Blended learning/technology integration; Teachers' motivation-inspiration-retention; Pakistan's higher education*

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INTRODUCTION

Electronic devices dominate a large part of our lives these days, so it has become natural for educators to question their use, which can be helpful for increased learning. It is crystal clear through inspecting the possibilities and analyzing the research that within the educational sphere, the fulfillment of electronic devices is influenced by many factors. The question of the selection of a suitable electronic device for learning purposes remains the primary focus of debates regarding blended learning. However, it is admitted that electronic devices can be used to enhance learning and become a primary focus for instructional designers, cognitive scientists, and educational mentors. Very frequently, similar tasks are executed through electronic devices that were formerly done without the aid of an electronic device (Aslam et al., 2021; Huda *et al*., 2017).

The fact that technology can contribute significantly towards improved learning is already accepted. However, how to use it properly remains a debatable area. A model known as SAMR for technology integration is being adopted these days. This model adds value to learning by using advanced learning technology. Developed in 2011 by Dr. Reuben Puentedura, the model has been used across the globe to transform the classroom from merely substituting what is already being done to revamping the tasks done by students (Lubega et al., 2014). We have already entered into the era of blended learning by adding technology to learning based on proficiency. This type of learning in which technology is being used provides learning opportunities apart from those limited in the classroom. This cannot be regarded as the delivery method, but it is a new way of teaching and learning. It is not a substitute for practices within the classroom, students still have to attend classes during the set time frames according to their timetables, but it allows the learner to go through the subject material at their momentum, selecting resources that align with their learning needs. Students can give a swift, standard assessment, steer work of theirs and have options. By going through their material, they can also track their progress. The structural framework decides how efficient blended learning can work. SAMR model provides the possibility to structure those mixed learning opportunities that will work (Hamilton et al., 2016).

Implementation at this level exhibits the lowest rank on the SAMR model, which comprises four ranks of technology incorporation (substitution, augmentation, modification, and redefinition) and also gives structure to aid

instructional designers and educational mentors in generating an ideal experience of learning through electronic devices in education. Teachers need to be more willing to teach effectively is the reason for the adoption of teaching through this proficiency-based model. There is no need to turn to the plan book and see what they are about to teach that day. Teachers might be teaching multiple pieces of their plan book at once. The critical factor in learning and teaching on a proficiency basis is that the student decides the momentum at which they will work and the modes by which they will learn. 24/7 access to resources, learning materials, and interventions is what a student expects. Tools that are used in the classroom and Individual learning tasks can be devised through the SAMR model (Hamilton et al., 2016).

SAMR is a chain of four consistent parts that focuses on enhancing results, diligence, and depth through technology usage to a level where results can be maximized. For convenience, SAMR can be regarded as a classification of e-learning. The moment you enhance the learning standards, there will be an increase in depth and precision in students' learning. Well-structured blended learning opportunities confer themselves to a process of learning which includes the creation of content, analysis of data, and the possibility to relate new wisdom to real-world situations through web 2.0 technologies. The following examples are a glimpse of what blended learning practice looks like in each rank of SAMR:

Substitution: This category includes a classroom website that teachers may have created either as their software for grading or standalone. Whatever the case may be, it can be a bulletin board or digital assistant, which contains student assignments, assessments, and worksheets of the classroom. Learners can access their desired document or file, download it and start working anywhere. Once students are done, they can upload it to the website or email it for review. This is not different from what teachers have been doing in previous technology days; however, it is convenient since students can access the resource materials from anywhere and can work anywhere, inside or outside the school. Although it is accessible and easy, the educational gain is not much increased; the actual learning event remains the same as what was gained without technology.

Augmentation: Learning gets some extra at this point. This phase can be entered in a variety of ways. Augmentation is a rank to start, including a few distinctions for learners. Students can choose what is suitable for them if they are given resources in various media formats, as it is more convenient. It can be easier to provide links in project handouts to the websites to bring further clarity to various concepts. This process enhances learners' choice of time and format by giving easier interventions that keep learning going further (Kihoza *et al*., 2016).

Modification: This is where the idea is put through a test. A significant amount of re-designing of how students are asked to their learning is required in modification. Students' involvement is not passive at this stage. It is up to students with whom they want to work, choose the place and time where learning starts, and how they want to express their learning. Without contacting physically, students can collaborate on team tasks through documents, presentations, graphics, and or video projects. Students can also share their work progress with the teacher so that their work can be monitored and guided if it is off track. Students can start exploring the other faction of learners apart from the classroom. Their viewership expands from just teachers to other factions of coaches/peers in and out of the classroom. Learners are motivated to share their work of theirs with people belonging to groups other than their peers (Keane *et al*., 2016).

Redefinition: This level pushes students to further limits where technology is necessary. The blended learning tool might begin to look more like social media. The role of the mentor becomes more like a facilitator and the learner becomes a participant, which makes the flow of work smooth out of class and in class. Tools chosen by students and teachers, provide the opportunity for learning to become global. Learners get motivated at this rank to grow their networks of learning and to work safely in a comparatively free environment where they will have to possess specific skills. The learner can work in distant areas with professionals/students or in teams and can also create, find, and share resources with peers and instructors. Discussion requires student-acquired knowledge for participation in activities, which is why the discussions are reflective. By now, learners will possess a firm knowledge of the working standards and how they can master them by overcoming their weaknesses. These students will also work to demonstrate how the acquired knowledge can be applied to real-world situations by developing assessments with their instructors (Batiibwe et al., 2017).

Keeping in view the recent status of blended learning in Pakistan, it is clear that teachers need to update their teaching styles and practices both for online and face-to-face learning. Before the COVID pandemic, teachers were not technology savvy. This shift in learning required teachers to be familiar with advanced learning technologies. Therefore, investigating teachers' perceptions about technology integration can provide more insight into their teaching styles and students' learning experiences. The study measured teachers' motivation, inspiration and retention levels keeping Puentedura's SAMR model intact, which has been given comparatively less significance in the Pakistani context (Aslam et al., 2021).

The Rationale of the Study

Numerous studies on the adoption and utilization of web 2.0 technologies state that technologies are effective in knowledge creation (Balkan, 2012; Kale, & Goh, 2014; Wordofa, 2014). In addition, researchers have also concluded that instrumental use of web2.0 technology is not without its limitations (Chawinga, 2017; Nascimbeni, & Burgos, 2016). The problem addressed in this study stems from the need to shift teachers' motivational level of adopting blended learning practices towards retaining their use (retention level). As discussed in the literature, faculty gets motivated to adopt blended learning practices but fails to retain these (Brown, 2016; Ma'arop & Embi, 2016; Thompson *et al*., 2019). This study explores Pakistani teachers' motivation, inspiration, and retention level for adopting the SAMR model for blended learning practices at higher education levels.

Research Objectives

The following objectives were formulated for the study:

1. To explore the motivation level of Pakistani teachers in adopting the SAMR model for effective blended learning practices.
2. To investigate the inspiration level of Pakistani teachers in adopting the SAMR model for effective blended learning practices.
3. To diagnose the retention level of Pakistani teachers in adopting the SAMR model for effective blended learning practices.

Research Questions

To achieve the objectives, the study sought to answer the following questions:

1. What is the motivation level of Pakistani teachers in adopting the SAMR model for effective blended learning practices?
2. What is the inspiration level of Pakistani teachers in adopting the SAMR model for effective blended learning practices?
3. What is the retention level of Pakistani teachers in adopting the SAMR model for effective blended learning practices?

CONCEPTUAL FRAMEWORK

Motivation level of teachers in using blended learning approaches regarding SAMR Model: The level of motivation (extrinsic & intrinsic) is of utmost importance in adopting technology for enhancing teaching learning ecology. To keep students stimulated, a teacher needs to possess ICT competence from substitution to redefinition level. A motivating teacher must offer conditions through which students feel stimulated to use technology for learning enhancement, creativity, and friendly competition. Block *et al*. (2016) have reflected that technology bottleneck stages can be guided by extrinsic motivation. Once it becomes self-sufficient, extrinsic inducements will become superfluous. However, it is a fact that both extrinsic and intrinsic motivation for using technology in learning by teachers complement each other also. The retention phase of using technology for blended learning is the ultimate phase (Lin, Chen, & Liu, 2017). Similalry, Shabani (2012) has regarded intrinsic motivation as the integral belief of adopting technology for redefining learning through a blend of technology. SAMR model has the potential for guiding teachers and practitioners in their exertions for navigating a complex landscape regarding motivation and retention of using technology gadgets by teachers (McKnight *et al*., 2016).

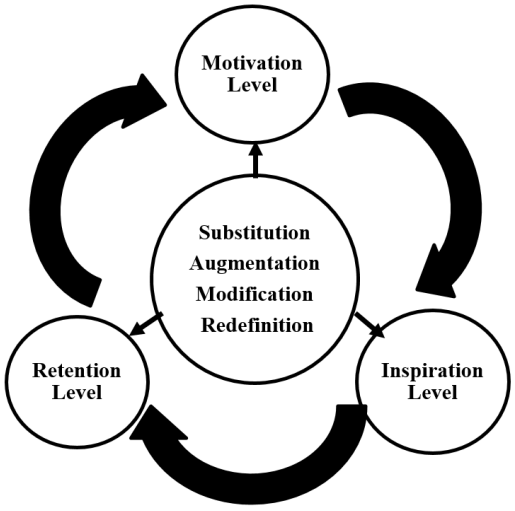

Figure 1: Conceptual framework of the study

Table 1: Elaboration of SAMR in the context of the conceptual framework of the study

	Substitution *Technology acts as a direct substitute tool without functional change*	Augmentation *Technology acts as a direct substitute tool for functional improvement*	Modification *Technology allows for task design significantly*	Redefinition *Technology allows for the creation and incorporation of new tasks*
Motivation Level (Extrinsic)	I type my lesson plans and official documents because I get appreciation from my higher-ups.	I prefer to communicate feedback to my students about their assignments through emails because they feel motivated.	I prefer to share relevant educational videos with my students because they appreciate them.	I prefer to provide e-books and interactive reading material about relevant topics to my students because they feel inspired.
Inspiration Level (Intrinsic)	I type my lesson plans and official documents because I have interest in doing so.	I communicate feedback to my students about their assignments through emails because I feel happy to integrate ICT into the classroom.	I search and share relevant educational videos with my students because it gives me inner satisfaction by reinforcing learning through ICT integration	I provide e-books and interactive reading material about relevant topics to my students because it gives me inner satisfaction by reinforcing learning through ICT integration.
Retention Level	I regularly type my lesson plans and official documents to keep a perfect record.	I regularly communicate feedback to my students about their assignments through emails	I regularly search and share relevant educational videos with my students	I regularly provide e-books and interactive reading material about relevant topics to my students

METHODOLOGY

Research Context

This research study was conducted in public sector universities in Punjab, Pakistan. Four faculties (Social Sciences, Management Sciences, Engineering, and Languages) offering postgraduate and undergraduate programs at selected universities were approached for data collection purposes.

Participants

Participant recruitment for this research was through an email list obtained from the concerned offices of the four faculties. The randomly selected final sample consisted of 340 (Male, n=171 and Female n= 169) faculty members across four faculties of two public sector universities in Punjab. All participants confirmed that they were using blended learning practices in one way or the other with their students. After getting their written informed consent, a self-constructed five-point Likert scale survey was given to them. Furthermore, twenty-four participants from each university (24×2) were randomly selected for focus group discussions. The maximum size of each focus group was six, and suitable time was allotted for discussion. Written informed consent before the start of focus groups was also taken.

Instruments

A self-developed questionnaire based on three constructs (motivation, inspiration and retention) and a semi-structured interview were used to obtain the data for the study. The questionnaire was based on three major levels of technology integration, i.e., motivation, inspiration, and retention level keeping in view the SAMR model. The instruments were validated by experts working in HEIs. The construct validity of the questionnaire was assessed through factor analysis. Items under each construct were tested, and items with a discrimination value of less than 0.4 were eliminated. The Cronbach's Alpha was found 0.81, indicating the high reliability of the questionnaire.

Data Collection

This study adopted a phenomenological approach, and data was collected through mixed methods. A self-constructed questionnaire was the research instrument in addition to semi-structured interviews which helped to draw out in-depth inferences about the phenomena under study. Respondents included teachers from public sector universities of Pakistan.

Data Analysis

Qualitative data were analyzed through percentage, mean and standard deviation. Thematic analysis was conducted to obtain the themes from qualitative data.

RESULTS AND FINDINGS

The data presented here has been broken down into three sections. The first section consists of demographic data, the second section comprises quantitative data concerning faculty opinions on a five-point Likert scale questionnaire; the third section builds up qualitative data analysis based on focus group discussions.

Section I Demographic Data

According to demographic data analysis, male faculty constituted 50.3%, whereas female faculty was 49.7%. Further demographics related to faculty qualification and experience are displayed as graphic representations.

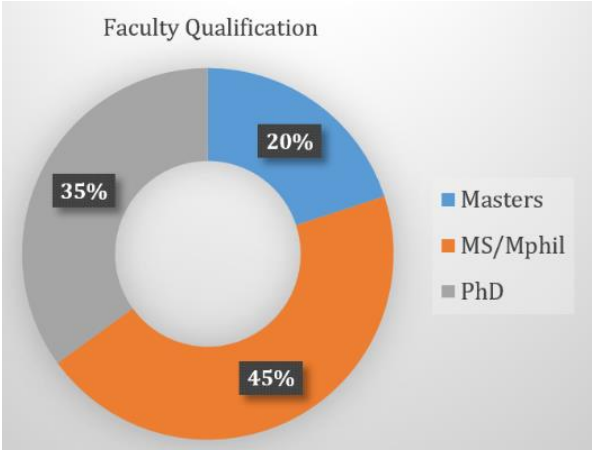

Figure 2: Qualification of faculty involved in the survey

This figure demonstrates that 20% had a Master's degree, 45% were MS or MPhil, whereas 35% had a doctorate in their specific fields.

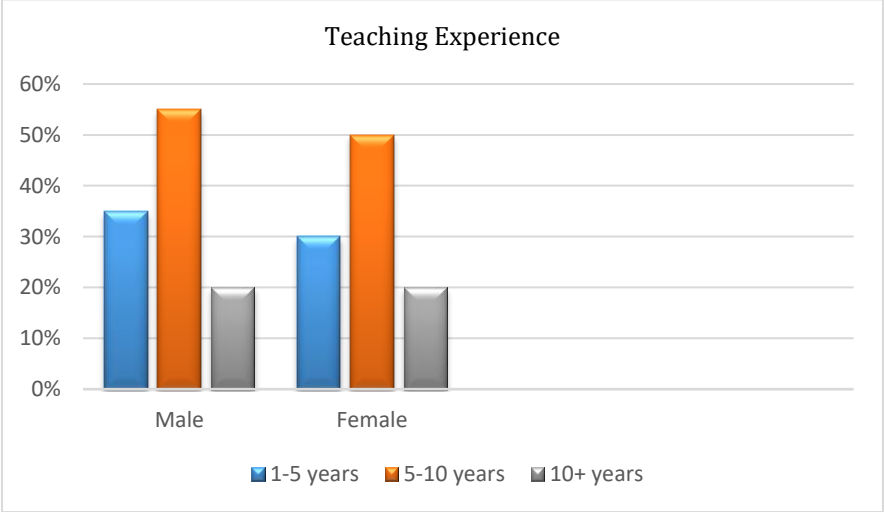

Figure 3: Teaching Experience of Male and Female faculty members

The above figure displays that the male faculty involved in this survey study included 35% with 1-5 years of teaching experience, 55% had 5-10 years, and 20 % with more than ten years of teaching experience. Among female faculty chosen as respondents, 30% had 1-5 years experience, 50% had 5-10 years and 20% had over 10 years of teaching experience. This reflects a near-even split among both genders participating in this study.

Section II Survey Analysis & Thematic Analysis:

A survey conducted on a five-point Likert scale, i.e.; strongly disagree, disagree, I don't know, agree, and strongly agree, gave insights into faculty adoption of blended learning practices on motivation, inspiration, and retention levels. Table 2 communicates the mean scores against each statement of the three subscales in addition to the overall mean score of the Motivation scale.

Table 2: Mean scores of Motivation Subscale (n= 340)

S.No	Statements	SDA	DA	IDK	A	SA	Mean	SD
1	I type my lesson plans because I get appreciation from my superiors.	10%	10%	10%	50%	20%	3.6	1.2
2	I prefer to communicate feedback to my students about their assignments through emails.	20%	10%	05%	45%	20%	3.4	1.2
3	I prefer to share relevant educational videos with my students.	15%	20%	08%	37%	20%	3.3	1.1
4	I prefer to provide e-books and interactive reading material about relevant topics to my students to motivate them.	37%	23%	10%	20%	10%	2.5	1.4
	Overall Mean of Motivation Subscale						3.5	

The table displayed above shows the highest mean score on the statement "*I type my lesson plans because I get appreciated from my supervisors*" (70%, Mean= 3.6, SD=1.2). This means that Pakistani teachers are still in the substitution phase of using technology for blended learning practices. The statements scoring least were "*I prefer to share relevant educational videos with my students*" (57%, Mean=3.3, SD=1.1) and "*I prefer to provide e-books and interactive reading material about relevant topics to my students to motivate them*" (30%, Mean= 2.5, SD= 1.4). It reflects that teachers still need the motivation to move towards modification and ultimately redefinition of using

technology for the incorporation of novel tasks in their pedagogy. The overall mean score is 3.5, communicating that most teachers are motivated to use basic technology like MS Word and emails covering the substitution phase of the SAMR model.

Two questions were asked in semi-structured interviews from randomly selected respondents (48) out of the given sample in the domain of motivation for adopting blended learning practices. The open-ended questions helped in getting deeper insight into the level of adoption of four phases of the SAMR model regarding motivation, inspiration, and retention level of Pakistani teachers.

Q1: How does the learning context of the university render itself to the blended learning approach?
This question was answered by the teachers through very diverse replies, out of which major themes and sub-themes emerged as follows:

Theme 1: "University management is supportive and encourages for using blended approaches in teaching-learning. However, I do not have frequent internet access".

Theme 2: "Senior teachers do not emphasize much on using blended approach and think it as wastage of time and resources".

Theme 3: "Teachers think that blended learning practices help disseminate the latest knowledge to students and give immediate feedback".

Table 3: "How does the learning context of the university render itself to the blended learning approach? (n= 48)

Theme 1: Attitude towards blended learning practices			
Sub-themes	%age of responses	Glitches	%age of responses
1. Attitude of University Management			
• Supportive/encourage	70%	• Infrequent Internet access	60%
• Non-supportive	30%	• Slow Internet	40%
2. Attitude of Middle Management			
• Not much emphasis on blended learning	65%	• Wastage of time and resources	65%
• Emphasis on blended learning	35%	• New method	35%
3. Attitude of Colleagues			
• Helpful in disseminating the latest knowledge	55%	• Internet to be provided effectively	100%
• Giving immediate feedback to students	45%		

Table 3 displays the sub-themes under the major theme of attitude towards blended learning practices. It indicates that University management is mostly supportive of this concept (70%); however, they need to overcome the glitches like infrequent (60%) and slow internet (40%). It means that the learning context of universities is mostly able to adapt and absorb blended learning practices which is a positive sign for teacher motivation. Furthermore, as discussed earlier middle management shows resistance towards this and considers it a wastage of time to incorporate ICT in the teaching-learning milieu (65%), but the encouraging point is that 35% of teachers consider it a new methodology and emphasize it. As illustrated previously, if top-level management of universities is supportive and provides a conducive ecology for the adoption of blended practices, then middle-level management may become more motivated and optimistic about this notion. Last but not least, teachers have expressed that their colleagues are motivated to use blended learning practices because they think these as helpful tools for disseminating current trends in knowledge (55%) and giving immediate feedback to students through emails (45%). However, all opined (100%) that provision of the internet must be effective and without disruption.

Q2: Which type of Web 2.0 technologies are teachers motivated to use in teaching and why?
The respondents gave varied answers to the above-mentioned question and the following themes/sub-themes emerged along with the frequency of responses:

Theme 1: "Teachers are mostly using emails for student feedback and information sharing as it is quick and safe. In addition, this email helps in maintaining a written record of everything."

"We are not regularly using e-books, Facebook, Twitter, Skype, and YouTube as supporting technologies for blended learning practices".

Theme 2: "Email is quick and safe whereas many issues such as poor connectivity and privacy are linked with using YouTube, Facebook, Skype, and Twitter as blended learning resources".

95% of respondents were using emails to provide feedback and disseminate required information as they thought it to be easy and safe. 35% of teachers are using e-books and interactive reading material for learning support while others thought (65%) it is time-consuming and problematic in downloading. Only 25% of teachers were of the view that Facebook is helpful in teaching whereas other 75% thought that privacy issues may arise due to which it is not a reliable tool. 80% of teachers were not using YouTube for academic purposes due to difficulty in downloading relevant videos and weak internet connection. Similarly, Skype (85%) and Twitter (95%) were not incorporated for classroom teaching purposes.

Table 4: "Which type of Web 2.0 Technologies are being used in teaching and why?" (n=48)

Theme 1: Web 2.0 technologies being used	
Web 2.0 Technologies	Frequency of its use
Emails	95%
e-books/ reading material	35%
Facebook	25%
Youtube	20%
Skype	15%
Twitter	05%
Theme 2: Reasons for using these technologies for blended learning practices	
Emails	Easy to use for feedback and maintain a written record
E-books/reading material	Time-consuming to search for relevant material and problems in downloading
Facebook	Difficult to maintain privacy and not much dependable for course completion
YouTube	Difficult to download relevant videos, cannot use frequently due to weak internet connection
Skype	Internet disruption and poor connectivity discourage its use
Twitter	Do not have enough knowledge about using Twitter accounts/blogs

Table 5: Mean scores of Inspiration Subscale (n= 340)

S.No	Statements	SDA	DA	IDK	A	SA	Mean	SD
1	I type my lesson plans and official documents because I have the interest to type them.	5%	15%	05%	20%	55%	4.1	1.2
2	I communicate feedback to my students about their assignments through emails.	15%	15%	05%	25%	40%	3.6	1.1
3	It gives me pleasure by reinforcing learning through ICT integration.	20%	20%	05%	25%	30%	3.2	0.9
4	I provide interactive reading material about relevant topics to my students because it gives me inner satisfaction by reinforcing learning through ICT integration.	60%	20%	0%	10%	10%	1.9	0.8
	Overall mean of Inspiration Subscale						2.6	

Table 5 gives a view of the inspirational level of Pakistani university teachers in adopting the SAMR model for blended learning practices. The highest agreeing score is for the statement *"I type my lesson plans and official documents because I have an interest to type them"* (75% Mean=4.1, SD= 1.2). It means that teachers substitute technology for typing lesson plans without a major functional change. They do so due to their interest, so it means that lessons are typed only by those teachers who have a personal liking for technology use in the teaching-learning process. The statement "*I provide interactive reading material about relevant topics to my students because it gives me inner satisfaction by reinforcing learning through ICT integration*", manifested the highest negative score (80%) meaning that the redefinition phase of the model does not exist among university teachers. They are not inspired to extract relevant material from the internet for reinforcing learning through ICT integration. The overall mean score of this subscale (2.6) denotes that agreeableness towards the inspiration subscale is at lower levels as compared to the motivation subscale.

Two open-ended questions related to the inspiration level of teachers in adopting the SAMR model gave insights into the designated phase. Some themes/sub-themes emerging from these questions are displayed and discussed below.

Q3: How frequently are you provided training to use web 2.0 technologies for enhancing blended learning practices?

Theme 1: "My university management provides training in using MS Office but does not focus on the latest web 2.0 technologies"

Theme 2: "We are provided frequent training as in every semester but resource persons are not very impressive".

"We are provided training during our vacations/semester breaks which are exhaustive".

Theme 3: "Our university does not provide any regular in-house training but gives permission to participate in paid training outside the premises. We are not provided any financial support for paid training".

Thematic analysis of the above-mentioned research question divulges that 95% of training provided by university management is about MS Word, whereas the latest web 2.0 technologies are ignored. Whereas the SAMR model states that if teachers' inspiration level has to be increased, then the latest technology needs to be incorporated to move towards the modification/redefinition phase. Another emerged theme is about frequency/ timings of providing such training. 80% of respondents agreed that ICT training is provided every semester, whereas 75% highlighted that these are given during summer/winter/term/semester breaks which become exhaustive and boring for them as they want to avail such vacations. The last theme was about in-house/paid training outside the university premises. 40% agreed that they are provided in-house training related to MS Office, whereas 80% told that they are given permission from university administration to attend paid training outside the premises but 85% highlighted that the university clearly states that no financial liability lies with it, so it becomes unaffordable for them to attend such training.

Table 6: "How frequently are you provided training to use web 2.0 technologies for enhancing blended learning practices?" (n=48)

Theme 1: Trainings provided by University	Frequency
MS Office	95%
Use of Facebook	05%
e-books/ reading material	20%
Skype	05%
Twitter	0%
You tube	05%
Theme 2: Frequency of trainings	
Every semester	80%
In Summer/winter vacations	75%
Every 2-3 months	40%
Theme 3: In-house/Paid trainings outside the university	
In house trainings	40%
Permission for paid trainings	No=20%, Yes=80%
Financial support for paid trainings	No= 85%, Yes= 15%

Q4: How do you feel when you adopt blended learning practices in the teaching-learning process?

Theme 1: "I feel motivated to adopt blended learning practices as my students' interest increases but do not adopt this regularly".

Theme 2: "I have an interest in exploring e-books and interactive videos relevant to the course topics but do not know how to download them".

Theme 3: "Disrupted internet connection makes me frustrated and becomes the reason for not incorporating technology in teaching".

Theme 4: "No one appreciates whether I adopt any blended learning practice or not, so I think it is just a hassle".

Table 7: "How do you feel when you adopt blended learning practices in the teaching-learning process?" (n=48)

Themes	Frequency of responses
Theme 1: Self-motivated	25%
Theme 2: Interested but lacks training	30%
Theme 3: Frustrated due to disrupted internet	30%
Theme 4: No appreciation	15%

25% of respondents are self-motivated to incorporate blended learning practices in teaching trajectory, which states that their milieu is still at the Augmentation phase. Similarly, only 30% responded that they were interested but lacked the required training. Another 30% shared that they felt frustrated due to disrupted internet and ultimately do not use it; reverting to traditional methods. 15% clearly stated that as there is no recognition, so they do not get involved in such activities and think of them as just a hassle.

Table 8: Mean scores of Retention Subscale (n= 340)

S.No.	Statements	SDA	DA	IDK	A	SA	Mean	SD
1	I regularly type my lesson plans to keep a perfect record.	35%	30%	15%	10%	10%	2.5	1.3
2	I regularly communicate feedback to my students about their assignments through emails.	10%	10%	05%	25%	50%	3.5	1.1
3	I regularly search and share relevant educational videos with my students.	60%	20%	0%	10%	10%	1.9	0.8
4	I regularly provide interactive reading material about relevant topics to my students.	40%	20%	10%	15%	15%	2.4	1.0
	Overall mean of Retention Subscale						2.3	

Mean scores of the subscale Retention level reflect that the statement "I regularly communicate feedback to my students about their assignments through emails" shows agreeableness of respondents (75%, Mean=3.5), whereas the highest mean score on the scale of strong disagreement is on the statement "I regularly search and share relevant educational videos with my students" (80%, Mean= 1.9). The overall mean score of this subscale is Mean= 2.3 indicating that respondents' inclination is towards disagreement with most of the statements. Another major finding is the overall mean score of this scale is least as compared to the other two sub-scales, indicating that Pakistani teachers are far from the level of retention for frequent adoption of ICT for blended learning practices.

Q5: What are the opportunities for teachers to use blended learning approaches at the university level?

Theme 1: "We are not given any incentive/ acknowledgment to adopt blended learning practices, then why do so".

Theme 2: "My university allows me to attend any training for adopting blended practices outside the university without any financial liability".

Q6: What are the challenges for teachers regarding the adoption of blended learning practices at the university level?

Theme 1: "My workload does not allow me to spare time for incorporating technology in my teaching".

Theme 2: "I use blended approach or not, my performance evaluation remains the same from my seniors".

Theme 3: "I do not have any relevant training in using the latest technology for teaching-learning".

Table 9: "What are the opportunities for teachers using blended learning approaches at the university level?" (n=48)

Themes	Frequency of responses
Theme 1: Incentives/Acknowledgements	95%
Theme 2: Permission to attend training	80%

Table 9 displays the themes emerging from the question related to opportunities for teachers to use blended learning practices and the frequency of their responses. 95% of teachers agreed that they are not provided any incentives/acknowledgment if they adopt any latest technology in their teaching or not. So, if no incentive is provided the teachers will not be self-motivated to adopt such practices

Table 10: "What are the challenges for teachers regarding the adoption of blended learning practices at university level?" (n=48)

Themes	Frequency of responses
Theme 1: Heavy workload	85%
Theme 2: No impact on performance evaluation	90%
Theme 3: No relevant training	85%

The above-mentioned table illustrates that heavy workload has been considered as the major challenge (85%) for no adoption of blended learning practices in addition to no incentives, lack of training, and disruptive internet connection. Furthermore, 90% of respondents were of the view that why adopt such practices when they do not affect their performance evaluation. Another 85% responded that no relevant training is provided for the adoption of the latest technologies, so they do not want to get involved in any hassle by themselves.

DISCUSSION

To inspire teachers in fully adopting technology-based learning practices, flexible, vetted, and adaptive frameworks are required to provide a deeper and gradual understanding of incorporating Information and Communication Technologies in teaching-learning trajectories rather than focusing on constraints or adaptability of a given tool. Teachers need not only to adopt technology for an enriched teaching-learning milieu but also to become self-inspired to provide technology-based learning experiences to students (Mishra *et al*., 2009).

Blended learning practices and motivation level of teachers

The first research question of this study probed about teachers' motivation level in using blended learning practices. Teachers' higher scores on the statement that they use technology to type and write their lesson plan to get appreciation from supervisors are very typical of intrinsic motivation level. Several studies (Janssen, 2014; Rafique *et al*., 2014) have also affirmed that appreciation and recognition encourage workers to improve their performance. A major finding of this research question is related to the SAMR model and the motivation level of Pakistani teachers. The finding states that teachers are still in the substitution and augmentation phase and less motivated toward the modification and redefinition phase of the model. Furthermore, two open-ended questions related to teachers' motivation level stated that the attitude of middle management towards adopting blended learning practices needs improvement. Because teachers have to report directly to middle management and chances of their motivation/ demotivation lie immediately with this tier of management which includes the head of the department, dean, directors, etc. For this purpose, middle management's acceptance of blended learning practices will enhance the motivation level of teachers, and they may move towards the redefinition phase (Soomro *et al*., 2018). In addition to this, university teaching faculty reflected that they frequently use email for educational purposes but are reserved in using Facebook, Skype, and Twitter for this due to privacy issues and lack of training. Moreover, minimal use of e-books, relevant videos, and interactive reading material was a significant finding as teachers consider themselves less trained in retrieving relevant material/videos and have weak internet connectivity. All these factors contribute to lower motivation in adopting technology for teaching purposes, resulting in remaining at the substitution and augmentation level of the SAMR model (Rahman et al., 2016).

Blended learning practices and inspiration level of teachers

The second research question of this study probed about teachers' inspiration level in using blended learning practices. Teachers' scores were found higher on the statement that they use technology while typing lessons and producing official documents. A major theme emerging under the inspiration level domain was about giving teachers training during holidays. Its finding states that teachers are disinterested, bored, and fatigued if training is provided during their work breaks. Different research studies also found similar results (Diao, 2019; Khaliq & Baig, 2018). This problem needs to be countered in two ways. Firstly, they may be given counseling that a good teacher never stops thinking about better teaching, and a good teacher is a lifelong learner. Secondly, if teachers do not keep taking new training and courses, they will miss learning about global advancements in their field. This era of being 'double-qualified' and 'double-talented' requires teachers to utilize their free time effectively (Diao, 2019). Moreover, university management must reconsider and re-design the teacher training modules. If practical, meaningful, and

inspirational training is required, then the latest trends in web 2.0 technologies must be incorporated into training modules. This will help inspire teachers and maintain pleasure in attending these sessions (Khaliq & Baig, 2018). Another perspective to re-designing training is that the teachers will be able to get in-house training in the latest trends, thus motivating them to become master trainers. This will go a long way in keeping them self-inspired to use technology for the creation and incorporation of newer tasks through the latest technology (Redefinition phase of SAMR model)

Blended learning practices and retention level of teachers

The third research question addressed the retention level of Pakistani teachers in adopting ICT for blended learning practices in the backdrop of the SAMR model. Teachers' scores were found higher on the statement that they regularly communicate the academic feedback of the students using appropriate technology, e.g., LMS, email, and WhatsApp. The major finding was the least mean scores of motivation level as compared to the other two levels. The motivation level has the highest score than inspirational and retention levels, respectively. The statements related to these three levels were constructed in the backdrop of the SAMR model. Findings also divulge that Pakistani university teachers are still at substitution/augmentation phases and must go a long way to attain modification/redefinition levels. This study is congruent with the findings of previous studies (Donoghue, 2006; Restauri, 2004; Tabata & Johnsrud, 2008; Wagner *et al*., 2008) as it also states that teachers do not retain the use of blended learning practices. Nowadays, universities pressure faculty to use relevant technology in their courses. However, no incentives/ acknowledgment is involved for those doing so. Some university management expects that supporting teachers to get paid training at their own expense is enough, but not all may be motivated to get such training at their own expense (Muslim *et al*., 2019; Romrell et al., 2014). Furthermore, university teachers have limited time to complete the allocated courses. As technology incorporation for blended learning practices is a time-consuming task, so they refrain from doing so. In addition to this, if a teacher's performance evaluation does not consider whether he/she is using technology, then we cannot expect self-motivated employees for this purpose. So generally, what happens is that teachers are either using technology in the form of MS Office for emails, typing lesson plans as a substitute tool without functional change (Substitution Phase), or integrating basic ICT for their interest as functional improvement (Augmentation Phase). Nevertheless, the creation and incorporation of newer tasks due to technology incorporation (Modification and Redefinition Phase) is lagging due to the challenges mentioned above (Golzar, 2019; Hofmann, 2014; Marcovitz, & Janiszewski, 2015; Andyani et al., 2020; Al Hashimi et al., 2019).

CONCLUSION

The study concluded that in blended learning implementation, universities are still at the Substitution/Augmentation Level of the SAMR Model, and many efforts are required for the effective implementation of blended learning practices to retain their importance in the pedagogy and shift toward Modification/Redefinition levels of the model. Appreciation, acknowledgment, incentives, and performance evaluation can serve as essential motives to enhance blended learning practices towards the design, creation, and incorporation of new task designs for redefining the role of technology in the teaching-learning trajectory. The era of being 'double qualified' and 'double talented' requires the teachers to get trained in adopting newer technological trends, and for this purpose, university management requires to be very supportive while providing frequent in-house ventures and exposures to its faculty.

RECOMMENDATIONS

It is recommended that the universities' administration may provide an extra computing infrastructure (e.g., servers, bandwidth, and storage capacity) to run the courses in a blended format. For this purpose, separate budgetary heads may be maintained. Faculty may be given frequent training on using the latest web 2.0 technologies, and incentives are provided for those who incorporate this into the teaching-learning trajectory. Awareness seminars and conferences may be arranged to break the myth that incorporating technology in pedagogy is time-consuming. Such activities may change the mindsets of middle management as well. This may help teachers to get inspired to use technology and ultimately retain this as a life-long professional practice.

LIMITATIONS OF THE STUDY

Creswell (2018) indicated that the major limitation of the mixed method study is that there may exist discrepancies between two sets of data (qualitative and quantitative). The additional limitations to the current study included the less generalizability of results. The study also depends upon the honesty of the respondents while participating in the data collection.

FUTURE WORK

Additional studies may determine how to better represent blended learning techniques, and the kind of technologies require to assess the learners' online learning practices. Future research may examine how faculty perceive their technology integration after attending any specific technology-based training. A longitudinal study may be conducted to examine the teachers' technology integration may guide administrators in designing suitable faculty development programs.

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