Virtual Meeting Platforms for Online Activities during Covid-19: An Empirical Evidence

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The Covid-19 pandemic has drastically altered the nature of communication worldwide and across contexts by mainstreaming Virtual Meeting Platforms (VMPs). Even though VMPs existed for more than a decade, the pandemic has accelerated their prevalence in academia and businesses. This paper goes beyond the usual debate on effectiveness of an in-person versus a VMP facilitated online interaction to propose that the effectiveness of VMPs will vary even with the type of online activity. Drawing on the extant literature and deploying a sample of 100 experts from academia and industry, the authors identified five generic components of group interaction, and empirically estimated the relative effectiveness of VMPs in facilitating five common online activities including classes, meetings, interviews.

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Introduction

Supported by the ongoing technological advancements, the Covid-19 pandemic has drastically altered the nature of communication across the globe lately. The traditional modes like face-to-face communication in both personal and professional spheres have shifted to Virtual Meeting Platforms (VMPs), particularly due to the complexity of the current situation (Oeppen et al., 2020). A broad set of activities, including social interactions, business, education, health check-ups, fitness events, entertainment etc., conducted in-person before the advent of Covid-19 have now shifted to VMPs (Cerf, 2020; Feijt et al., 2020). The pandemic also chartered a relatively new path of working remotely, promoting work from anywhere (WFA) in business organizations (Choudhury, 2020) and online learning in universities (Lowenthal et al., 2020).

In business organizations, the shift of 'work from home' (WFH) to 'work from anywhere' (WFA) got accelerated due to the Covid-19 crisis wherein the organizations, primarily in service sector, allowed employees to operate from any geographical location and carry out the work remotely (Choudhury, 2020).

Even though VMPs were intended to enable remote work and provide flexibility, collaboration and communication emerged as the most challenging issues for employers and employees (Xiao & Fan, 2020). Similarly, in the academic context, while colleges and universities adopted the VMPs for remote learning as an alternative to traditional classroom teaching, faculty and students reported issues related to distraction, engagement, and fatigue (Lowenthal et al., 2020). It cannot be overemphasized that effective communication is a critical success factor in education (Easton, 2003) and business organizations (Robbins & Judge, 2017: 383), like many other contexts. It is generally admitted that several activities, like teaching, business meetings, interviews, and seminars, that are being conducted over VMPs may differ in terms of effectiveness of face-to-face communication (Basch et al., 2020; Lowenthal et al., 2020).

Recent literature also identifies certain boundary conditions that may impact variability in effectiveness of the process (e.g. Bruss & Hill, 2010; Putri et al., 2020; Rizun and Strzelecki, 2020). For example, Stoller (2021) suggests that while VMPs help in curtailing the travel time for attending meetings at work and offer flexibility, the connectivity disruptions and fatigue associated with the virtual communication can be the downsides while using VMPs at work, and thus recommends the need for face-to-face communication at work. Purvanova (2014), in an extensive review of several studies found that face-to-face teams perform better in terms of decision making, communication frequency, and information sharing, however, teams communicating over VMPs have more contribution from group members, task-focus and more new ideas. Participants over VMPs may interrupt less and tend to be more polite to other participants, thus facilitating better communication than in the traditional mode of communication (Kleij et al., 2009). In an academic context, a study by Rizun and Strzelecki (2020) found that when students enjoy and feel confident using VMPs, they hold positive sentiments towards education over VMPs. However, they still prefer traditional ways of teaching, deploying face-to-face communication as they can collaborate better with friends and carry out discussions with teachers. In another study by Putri and colleagues (2020) focusing on primary school education over VMPs, it was found that there were variations in the manner students responded over VMPs as compared to face-to-face communication and restrained communication and socialization often reduces the efficacy of classes conducted over VMPs. Cole (2016) supported the notion that students are more satisfied with face-to-face delivery of classes than those conducted over VMPs, however, their satisfaction levels with classes delivered over VMPs are predicted by perceptions of

instructors' communication behaviors. While face-to-face communication is usually more effective than that over VMPs, Bruss & Hill (2010) recommend that teachers can use VMPs to form better relationships with their students as communication over VMPs is expected to elicit higher self-disclosure levels which is an important element of building relationships and thus can improve teaching effectiveness.

Communication effectiveness might be activity-dependent as well.

Going a step further, we in this paper conjecture that the communication effectiveness might be activity-dependent as well, and thus seeks to offer a fresh insight into this relatively new body of knowledge. We intend to make a departure from the debate of in-person versus VMP facilitated communication to probe a next level question: whether different events can be conducted over VMPs with comparable effectiveness, strictly from the point of view of VMPs as mode of delivery. In other words, VMPs act as facilitator with matching effectiveness for different events, the quality of content being discounted. It is important to note that we are interested to investigate VMPs utility purely from structural viewpoint by looking at it merely as a channel of communication. The study achieves its objective by implementing a mix of qualitative and quantitative approach, wherein we first dissect components of a typical formal communication, and then quantify effectiveness of VMPs in conducting five major academic and business activities by devising a metric named 'Media Effectiveness Score (MES)'. Apart from the inquisitiveness associated with a new development, our motivation emanates from both the present and the near future. Futuristically, we may think of a time when the pandemic has subsided and the world is weighing its options on switching back to traditional modes of communication. Our findings on gradation of activities may offer useful insights during such transition phase on deciding which of these can still be continued online (or as hybrid) and which one should preferably not. And for the present, the findings should be useful as users can see the relative centrality of communication components for a given event, and can be extra careful while delivering. Finally, this is the first study of its kind and thereby enriches the communication literature through its deployment of a very modern and pragmatic context.

Theoretical Foundation & Research Objectives

According to World Bank (2020), there is hardly any sector untouched by the adverse impacts of the Covid-19 global pandemic. With social distancing becoming a global response to Covid-19, the mode of communication has changed, and VMPs have become critical for in-

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teractions (Cerf, 2020). The interactions in a group can be 'formal' that are conducted via recognized channels following the established hierarchy or 'informal' that emerge out of communication channels which get created spontaneously out of social interactions (Robbins & Judge, 2017: 384). As scholars have adequately demarcated the official formal communication from the informal one (Johnson et al., 1994), this study focuses only on former type as it will be more relevant to group interactions occurring in academic as well as business settings. Considering formal communication as the foundation, we reviewed the literature to identify the various components that get transacted while communicating in a group.

Multiple components of typical group interactions have been identified in literature, such as point of view (PoV), information, argument, discussion, non-verbal cues, feedback, emotions (Robbins & Judge, 2017: 383-96), humor, metaphors, figure of speech, etc. (e.g., Ogilvy, 2014; Sédès, 2019; Yang & Yeh, 2021). Despite several components getting transacted in the interaction, extant academic and practitioner literature suggests that five generic components of formal group interaction are frequently transacted and considered under this study's ambit. These five components are PoV, information, argument, discussion, and non-verbal cues (Axtell, 2018; Robbins & Judge, 2017: 383-96; Stasser & Taylor, 1991). According to Stasser & Taylor (1991), PoV represents one's opinion and is exchanged and consolidated during group interactions. In a business context, upward communication can be made better by seeking employees' PoVs that help management get feedback on existing policies and practices in the organization (Robbins & Judge, 2017: 339). The second essential component of group interaction is information that gets shared as part of group interactions in business (Axtell, 2018), seminars (Saliba, 2020), and schools (NCERT, 2014 :55). Information sharing happens when the focus is on a spontaneous exchange of information in real-time or if there are critical implications of particular information on the group members (Krattenmaker, 2008). The third critical component is argument, that is substantiated opinion, that helps test and refines a particular idea (Jay, 1976). It is an act that is initiated when people interact and assert something or take certain position and then provide reasoning or justifications in support of the assertion. Arguments can be useful in the development of individual and collective reasoning abilities (Rojas-Drummond & Zapata, 2004). Discussion is the fourth component of group interaction that targets priority issues for better decision-making (Axtell, 2018) and can occur naturally or is constructed purposefully to facilitate collective decision-making (Zhang et al., 2017). In a group interaction, when individuals engage in the discussion process, positive outcomes like opinion changes and knowledge gain can be obtained (Strandberg, 2012; Zhang et al., 2021). The fifth and last component of the group interaction is non-verbal cues that include body movements, facial expressions, and intonations to impart an unsaid message (Robbins &

Judge, 2017: 396). Non-verbal cues play an important role in any group interaction and can also include proxemics, haptics, and kinesics (Strout et al., 2017). Research has found that non-verbal behaviors are critical in social interactions and affect the perceptions held by the individuals during an interaction, thus influencing their impressions about others (Rashotte, 2002).

While these interaction components need to be transacted for effective communication in any group setting, we argue that VMPs may not be equally effective in doing that for all components. In this regard, we confined ourselves to educational activities (primary classes, teaching at the university level), business-related (job interview and meeting) activities and seminars (academic and corporate) in this study.

In the domain of education, we found mixed results from the existing studies. For example, Gupta et al. (2021) found that students and faculty members perceive learning over VMPs as helpful; however, McQuiggan (2007) mentions that teachers' inability to receive non-verbal cues during class over VMPs can hamper teaching effectiveness. A similar finding was obtained by Dogget (2007), who found classes conducted over VMPs tend to be less interactive than face-to-face classroom teaching. Peper et al. (2021) argue that VMPs may impact active participation in group discussions and inhibit interactions and spontaneity. In academia, while online seminars are gaining acceptance due to disruptions caused by COVID -19, attending academic seminars in person provides ample discussion opportunities with fellow researchers (Roos et al., 2020). Seminars over VMPs may be prone to fatigue and do not allow interactions among the participants like conventional seminars do (Saliba, 2020).

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In the business context, though organizations have adopted VMPs as an alternative to face-to-face meetings, communication over VMPs cannot be considered as a replacement to the interactions in a physical office setup (Xiao & Fan, 2020). While researchers found that VMPs provide convenience, savings in time, and travel expenses compared to in-person meetings, VMPs cannot be used for all meetings, especially where the meeting agenda is unclear. In addition, the interactions which involve high stake decision-making may not be easily conducted using VMPs (Oeppen et al., 2020). Additionally, due to the partial appearance of individuals, some of the elements of physical presence might remain indiscernible during group interactions over VMPs. This may restrict the transaction of non-verbal cues, thus reducing the effectiveness of interaction (Mamtani et al., 2021), especially in virtual interviews (Basch et al., 2020).

It is also worth noting that the different activities like conducting classes at the primary and university level, job interviews, seminars, business meetings, etc., might have different constitution of components in group communication. For example, the main interaction components in conducting primary classes are generally considered as information and PoV (NCERT, 2014: 54-55), but less consideration is given to discussion and arguments (Rojas-Drummond & Zapata, 2004). The experts suggest that presenting arguments and sharing information with fellow researchers are important in academic seminars (Saliba, 2020) while information sharing holds importance in business meetings (Krattenmaker, 2008).

Based on the above discussion, we can say that there may be a variance in the effectiveness of VMPs in conducting said activities. Further, group interaction over VMPs being a new and relatively unexplored area of research, there is a need to carry out a study for estimating the effectiveness of VMPs in various online activities like conducting primary and university classes, seminars, job interviews, and business meetings. So, we have conducted this study considering the research question: "whether VMPs are equally effective in facilitating different activities or is there a variation?" Through this study, we serve two research objectives: a) identification of major components of group interaction that are transacted over both offline and online contexts and b) quantification of the effectiveness of VMPs with a newly devised metric named Media Effectiveness Score (MES).

Methodology

The adopted methodological approach is as follows. First, with the help of extant literature, we identified components of a group interaction that are usually transacted in one-to-one or one-to-many communications. We rated these components in terms of effectiveness with which VMPs can transact them and name the resulting score as Transactability Score (TS). Then, we identified some prevalent online activities that are conducted over VMPs these days. For each activity, we assigned a percentage share of different components of group interaction in terms of their prevalence in that activity under normal circumstances. This score is termed as Prevalence Score (PS). Next, we define a metric as Media Effectiveness Score (MES) for an online activity that essentially denotes the effectiveness of VMPs in facilitating that particular activity to fulfill its intended objectives. MES is operationalized through a weighted summation, that is by multiplication of TS with PS and summation of the same for a given activity. Thus, each activity will have a different score indicating its relative suitability to conduct on VMPs. MES will be more useful in making a comparison among various activities rather than in isolation. It may be noted that MES solely denotes VMPs' suitability to conduct an activity rather than the effectiveness of its content and/or presentation. The study was conducted in three steps discussed below.

Step1 Identification of Critical Activities Using VMPs: In this study, we

deployed judgment of three senior faculty members and 10 corporate alumni of a premier academic institution to identify the following five activities that extensively and regularly use VMPs, namely (i) online classes for primary level students (children from first to fifth standard), (ii) online classes for university-level students, (iii) corporate and academic seminars, (iv) job interviews, and (v) meetings (involving strategic decision-making).

Step 2 Obtaining Transactability Score for Different Components of Group Interactions: We deliberated on this aspect and finalized this list of components based on (a) their grounding in academic and practitioner's literature, and (b) their relevance in the online context. Extant literature identifies five components that are transacted in typical group interaction- (i) point of view (PoV) or opinion, (ii) information (including representation of facts, axioms, written accounts either verbally or using electronic or print media such as handouts, videos, etc.), (iii) argument (iv) discussion, and (v) non-verbal cues (NVC) (including gesture, posture, tone, intonation, etc.)

Identification of the aforementioned components was followed up by obtaining Transactability Scores (TSs) that indicate the suitability of VMPs in facilitating the transaction of a group interaction com-

Table 1 Demographic Profile of Experts (N_1 = 50, N_2 = 50, N_{Total} = 100)

Variables	Level	No. of Observations	%
[From Academia (N_1=50)]			
Gender	Male	32	64
	Female	18	36
Age			
(Mean=45.72 year, S.D. =9.12 year)	25-35	4	8
	35-45	18	36
	45-55	19	38
	>55	9	18
Designation	Assistant Professor	8	16
	Associate Professor	6	12
	Professor	36	72
[From Corporate (N_2=50)]			
Gender	Male	41	82
	Female	9	18
Age			
(Mean=44.38 year, S.D. =8.67 year)	25-35	8	16
	35-45	12	24
	45-55	23	46
	>55	7	14
Hierarchical Level	Entry	13	26
	Mid	11	22
	Senior	26	52

ponent. Due to the exploratory nature of this work, we resorted to expert opinion and rating method for obtaining TS. To have adequate representation, we used purposive sampling to obtain a sample of 50 participants, each from academia and corporate, thus resulting in a pool of 100 experts. Corporate participants represented diverse industries such as banking and finance, IT, FMCG, heavy industry etc. The demographic details of participants are provided in Table 1.

All the academics and managers included in this study have been conducting their activities online for over a year and thus have fair experience and also indicated using VMPs for their children's education, socialization, participating in online yoga, medical consultation, etc. So, we forwarded an online form to all the 100 experts and asked them to rate the five components on a scale of 1 to 10 ("1" indicating least suitable and "10" the most). For example, if someone rates 'Argument' as 8 that would mean s/he strongly believes that this component can be easily transacted over VMPs. These ratings were finally averaged to obtain component-wise TS (Table 2).

Step 3 Obtaining Prevalence Scores for Different Activities: These scores were obtained from the same pool of experts after two months to minimize common source bias (Podsakoff et al., 2003). This time they were given the list of five activities and five components and were asked to divide a score of 100 across those components for each activity in terms of their prevalence in that activity under normal circumstances. In the end, all the component-wise scores were averaged to get PS for all the five activities (Table 2).

Table 2 Computation of Media Effectiveness Score for Various Online Activities

Component		Primary Class		University		Job Interview		Seminar		Meeting	
Name	TS	PS_P		PS_U		PS_I		PS_S		PS_M	
PoV	8.12	20.35	165.24	10.15	82.41	10.60	86.07	6.20	50.34	6.4	51.96
Information	6.21	56.35	349.93	31.10	193.13	26.30	163.32	38.75	240.63	19.45	120.78
Argument	8.03	5.03	40.39	19.65	157.78	23.50	188.71	31.15	250.13	21.10	169.43
Discussion	4.06	5.10	20.70	18.85	76.53	4.85	19.69	5.95	24.15	38.20	155.09
NVC	2.11	13.17	27.78	20.25	42.72	34.75	73.32	17.95	37.87	14.85	31.33
Media Effectiveness Score		MES_P	604.06	MES_U	552.59	MES_I	531.11	MES_S	603.15	MES_M	528.61

Note: For explanation and expansion of abbreviations see text

Step 4 Computation of Media Effectiveness Score: Finally, MES was computed for each activity by multiplying corresponding TS and PS and then summing them up, as shown in Table 2. The maximum possible MES is 1000 and will result when each component receives TS as 10, and all PS are equal at 20%. As per Table 1, the range of MES for given activities varies from 528.61 to 604.06. In terms of MES, primary level classes and seminars got top two positions in terms of MES, whereas job interviews and meetings finished at the bottom. University-level classes got a moderate score. As per our conceptualization of MES, primary-level classes and seminars can be most effectively conducted over VMPs.

Results & Discussion

The results of this study indicate the differential nature of effectiveness of various online activities conducted over VMPs. It further suggests that not all activities are equally effective when conducted online. Rather, it depends on the relative share of different components like PoV, information, argument, discussion, and non-verbal cues. Hence, these components need to be taken care of for effective group interaction. By thoroughly reviewing literature and empirically estimating the effectiveness of VMPs in facilitating online activities, this study suggests that VMPs most suit the conduct of primary classes and seminars and least support the conduct of job interviews and business meetings.

Not all activities are equally effective when conducted online. Rather, it depends on the relative share of different components like PoV, information, argument, discussion, and non-verbal cues.

The first activity that VMPs can facilitate effectively is conducting primary classes. Our results align with the components of communication, e.g., information and PoV, which are more important than discussion and argument in primary education (NCERT, 2014: 54-55; Rojas-Drummond & Zapata, 2004). Consequently, the media effectiveness score for conducting primary classes as online activity falls on the higher side. It suggests that the effectiveness of VMPs is the highest in teaching primary classes (class I-V) through online medium than the other activities. The practical implication of this finding is that the VMPs can provide access to primary education in remote areas where the traditional teaching methods are constrained. It should be noted that the results of our study focus only on the effectiveness of VMPs and should be considered independently from the course content and the instructor's skills.

The second activity that can be facilitated effectively over VMPs is seminars. Since, exchange of ideas or information and arguments are the main components of communication in a seminar or conference (Saliba, 2020), VMPs can smoothly facilitate such group interaction. So, if a seminar is conducted over VMPs, it can save huge costs associated with

travel and venue and can increase the collaborations globally for knowledge transfer (Saliba, 2020), and cause low environmental impact (Roos et al., 2020). However, additional communication may happen during breaks in seminars organized in a traditional manner, thereby promoting collaboration and trust among participants, which can be a challenge if seminars are conducted over VMPs (Saliba, 2020).

For the university-level classes, our findings report moderate MES, which could be due to the considerable importance given to all group interaction components. The results suggest that improvement is required in VMPs to conduct university-level classes in a better manner. The moderate score of MES may also be indicative of an idea that not all types of classes can be effectively conducted over VMPs. Gupta et al. (2021) suggest that theory sessions can be conducted much better than practical ones with access to information as a facilitator in conducting university-level classes over VMPs. They found a lack of human interface as a hindering factor that may result in low levels of non-verbal communication and suggested e-learning as a supplement to the conventional methods rather than a replacement. Additionally, the instructors need to be better prepared and feel adapted to the teaching method over VMPs for the effective conduct of classes at the university level (Moorhouse, 2020). It is important to emphasize that the results of this study should be viewed from the delivery perspective of VMPs only as we do not account or claim anything related to psychosomatic disorders like stress, anxiety, insomnia, depression, etc. that may get induced by using VMPs (Peper et al., 2021).

Lack of human interface is a hindering factor that may result in low levels of non-verbal communication and e-learning is a supplement to the conventional methods rather than a replacement.

The MES score is second lowest for job interviews because of the highest importance to non-verbal cues and information sharing, supporting Basch et al. (2020), who state that non-verbal cues may get impaired in technology-mediated communication. The research on virtual hiring by Laker et al. (2021) also suggests that information sharing may not happen as desired due to technical problems during the interview, affecting the quality of interaction. The findings imply that considerable effort is required to make job interviews more effective over VMPs. The hiring managers should not treat the interviews over VMPs for selecting or rejecting the candidate but aim at sincerely gaining information about the candidate. Face-to-face interviews can then supplement an online interview. In addition, the interviewees should use hand gestures in line with their responses and keep an optimal speech pace in interviews over VMPs. Both candidates and interviewers should maintain a proper position from the webcam and look into it instead of focusing on the screen to establish eye contact better (Laker et al., 2021).

We also found that the VMPs are the least suitable for business meetings that primarily transact discussions, arguments, and information. Our results align with Oeppen et al. (2020), who suggest that meetings over VMPs may face several issues, such as interactions involving strategic decision making may not be easy to discuss using VMPs. Our results call for an appropriate user interface design of VMPs that can provide ways to carry out discussion and arguments. Additionally, the business managers should plan the meetings in advance by having all relevant materials ready, shared with the participants, and other best practices (Axtell, 2018). For future improvement of meetings over VMPs, the participants should reflect on their experience of the session and suggest ways to improve (Oeppen et al., 2020). These guidelines will help carry out meetings effectively though no complete replacement can be made for face-to-face meetings. Overall, we fulfilled the stated research objectives by unveiling the estimate of the effectiveness of VMPs in conducting various activities.

As mentioned previously, our findings and suggestions can be used both for addressing the present-day concerns with effectiveness, as well as for the future when normalcy will be back and we will be busy while re-working our priorities about continuation or discontinuation of all such online events.

Limitations & Future Research

Our work has its share of limitations. While we covered most of the online activities, we may not have covered all of them, e.g., social interactions, entertainment (Cerf, 2020), and healthcare-related activities (Feijt et al., 2020) that future studies can take up. For this study, we have considered only five generic components that are transacted most frequently as identified from the literature; however, future studies may consider other components of group interaction like metaphors, figure of speech, etc., even if these may have limited application in formal communication. Further, the researchers may consider taking samples globally and from various cultures where meetings may be organized differently to generalize the results better. They may also conduct a study based on qualitative research design as a follow-up to understand the reasons behind the differential nature of VMPs effectiveness in facilitating various activities and gather rich insights.

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