

The Role of High/low Context Style on Video Conferencing for Knowledge Sharing: the Moderating Effect of National Culture

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Abstract: Knowledge gives organizations competitive advantages. As globalization increases, technologies that enable interactions among virtual teams and across cultures are becoming a crucial component of knowledge sharing. Research pertaining to high/low context style is primarily limited to the Western context and emphasizes general information technology acceptance, without focusing on any particular medium. This paper seeks to investigate the moderating impact of high/low context style on video conferencing technology usage in particular, as applied to knowledge sharing in Jordan. This study used a questionnaire to collect quantitative data. The findings show that high/low context style negatively moderates the effect of social presence on the perceived usefulness and ease of use of video conferencing. These findings imply that the adoption of video-conferencing is influenced by national culture. This paper has significant implications on both theoretical and practical aspects of video conferencing for knowledge sharing.

Key words: Computer-mediated communication • Virtual teams • Video conferencing • High/low context style • National culture • Knowledge sharing

INTRODUCTION

Advances in Information and Communication Technology (ICT) have made knowledge a key strategic resource. Knowledge has the power to determine the success of an organization and can give an organization a sustainable competitive advantage, especially if the organization is globalized [1, 2]. However, in the context of globalization, cultural anthropologists argue that technology has a cultural component that influences the adoption, use and management of ICT [3]. ICT also enables users to find, process, store and share knowledge across cultures. Computer Mediated Communication (CMC) is any communicative transaction that occurs through the use of two or more networked computers [4]. CMC facilitates knowledge sharing through several popular forms, including e-mail, v-mail, video conferencing and text chatting [5, 6]. This paper focuses on the kind of knowledge that embedded in members of virtual teams who have gained various facets of knowledge through their experiences [7]. According to [8] knowledge sharing defined as a “deliberate act that makes

knowledge reusable by other people through knowledge transfer.”

This paper focuses on video conferencing technology, which is defined as technology that facilitates the simultaneous interaction of teams in two or more locations via two-way video and audio transmissions using electronic transmitters [9]. Video conferencing is an increasingly accepted technology for interacting across boundaries [10] because it is an effective media and a core technology for virtual collaboration [11]. To create successful virtual teams, it is necessary to effectively share collaborative knowledge with team members. [6] asserts that one organizational technique for building relationships and bridging cultural divides is to have teams interact via video conferencing, which leads to enhanced knowledge sharing.

Background: Through CMC, virtual teams are able to share knowledge effectively. However, CMC alone is insufficient; the effect of national culture must also be taken into account [12]. The diversity of members' cultural values and beliefs are challenging to assign to technology

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attitudes. Individuals from different cultures react differently, particularly when arguing [13]. Because CMC was created to enhance virtual teams whose members are geographically dispersed, CMC researchers should extend their research into the investigation of cultural influences [14]. CMC usage differs from culture to culture, especially when it is used for knowledge sharing [15]. However, CMC could help build trusting relationships among dispersed virtual teams and enable users to share their knowledge more effectively [16]. The arrangement and function of the relationships among virtual team members differs across cultures [17]; the ways in which culture could impact the processes and quality of CMC interactions are also unknown [18].

One cultural dimension that is expected to impact the quality of CMC interactions is high/low context style, a concept that acknowledges the significance of intercultural understanding in facilitating effective communication among culturally diverse communicators [19]. [20] developed the concept of high/low context style as the degree to which users are aware of and pay attention to situational and contextual cues when interpreting messages. To provide a better understanding of the role of high/low context styles in communication, it is necessary define what context means in communication studies [21]. In a study by [22] defined context as “the information that surrounds an event, which is inextricably bound-up with the meaning of that event.”

Speakers in different cultures ground their messages in distinct ways to ensure that their messages have been understood [18, 20]. [20] argues that low context is common in Western cultures, especially in the U.S., because Westerners tend to prefer more direct communication and thus rely primarily on words to express meaning. Conversely, high context is common in Asian cultures, especially in Chinese, Japanese and Arab cultures [19]. These cultures tend to prefer more indirect forms of communication. Communicators therefore rely on the situational context to make meaning apparent [23, 24].

Textual technologies, such as e-mail or txt chatting are more effective modes of communication that allow low context users to understand messages than rich CMC, such as video conferencing [18]. The richness of a technology refers to the concept of social presence. Social presence is defined as the extent to which users feel close to another party via CMC [21]. A study carried out by [25] affirms that CMCs vary in the extent to which they can provide social presence. A richer CMC provides

more social presence. Social presence contributes vital dimensions to the way people communicate.

However, context not only affects what message can be communicated and how, but it also influences where, to whom and when [19]. Hence, context reflects the extent to which the communication situation includes knowledge that is fundamental to understanding the message. Message senders consider the cultural communication context when formulating a message and to varying degrees, message receivers interpret a message using unique cues obtained from the communication context. Because Arabs are from high context cultures, they rely on situation and context when interpreting messages. This implies that most knowledge is internal to the virtual teams and present in the physical environment; little knowledge is written. Effective communication relies on context and the degree to which virtual teams can mutually access shared knowledge and common understanding. Therefore, virtual teams from high context cultures usually do not share their knowledge with strangers unless it is necessary for them to know the other party thoroughly prior to building a relationship of trust. However, it is generally expected that a user’s perception of social presence (i.e., feeling close to another party via CMC) can increase CMC usage. Based on social presence theory, when two parties are communicating, certain norms and responsibilities or some type of personal relationship is maintained. These are known as interparty and interpersonal exchanges. Some media have a higher degree of social presence (e.g., video), which means that they are sociable technologies. [25, 26] assumes that sociable media has a high degree of social presence. Video conferencing media thus provide a high degree of social presence and social presence theory can therefore be applied to virtual teams’ use of video conferencing [27]. However, if Jordanian users feel close to others via video conferencing, do they also perceive high context values? If so, it would be logical to assume that Jordanian virtual teams would desire to increase the perceived usefulness and ease of use of video conferencing, which would allow them to rely on context while communicating.

There is an urgent need to address this cultural issue; as of yet, no study has focused specifically on high/low context styles in Jordan. Although Middle Eastern Arab cultures and Jordanian culture share certain cultural beliefs, differences do exist among them. Thus, generalizing the findings from several Arab countries to the entire Arab region can be misleading [28].

Literature Review: Culture is defined as a “collective programming of the mind, which distinguishes one group from another” [29] and shapes individual values and affects behavior [30]. National culture is “the collective mind-set that distinguishes members of one nation from another” [31]. CMC usage differs between cultures because users from different cultures react differently to it [13, 15]. The importance of CMCs' cultural role appears to be increasing, but the small body of research on CMCs and culture has to date been rooted in Western cultures [23, 32].

Studies carried out by [33, 34] reveal that culture has a significant impact on general CMC adoption. Therefore, it is possible that the impact of culture is also significant in adopting video conferencing technology. Video conferencing is the richest CMC tool and offers a high social presence [35]. Most studies, such as those carried out by [14, 18, 36, 37 and 38], explore CMC in general, while other studies examine particular medium(s). For example, [35] compare face-to-face and instant messaging, while [18, 39 and 40] focus particularly on audio and video conferencing. Most researchers explore the adoption of a set of media in general [41] and do not emphasize any particular medium. Therefore, these studies provide an insufficient understanding of the use of specific technologies, such as video conferencing.

A study by [23], describe several constraints affecting research during the last decade and explain the assumption that communication goals, trust relationships among communicators and contextual situations are perceived to be the same across cultures. Studies yield contradictory findings. For instance, [35] discover that there is more face-to-face communication among the Chinese than among Americans. This is due to the importance of personal relationships in Chinese society. However, communication between Chinese and Americans tends to rely on technologies such as text chatting. In this situation, conversation is chiefly textual rather than verbal and/or face-to-face. Due to the low social presence in text chatting, only minimal relationships are built. A study carried out by [18], demonstrates that the Chinese generally talk less when they communicate via text chatting or video conferencing. Asians (Chinese) have a higher preference for video conferencing than North Americans [39]. However, [40] assert that there is no difference between Asian (Chinese) and American culture in regard to communicating via video conferencing. Arab countries inherit high context culture [19, 42, 46]. A study by [47] on high/low context shows

that most of the previous studies are not based on empirical data.

Studies by [48-50] attempt to classify countries as having either a high or low context culture, but the findings are contradictory. Furthermore, these classifications invite confusion. For instance, [48] could interpret Japanese people as senders of implicit information (i.e., high context) but Japanese people address others with explicit information (i.e., low context). Contradictory findings reflect inconsistencies in conventional country classifications and show that they are flawed. This is a significant gap in the literature that should be addressed by future cultural research on Hall's high/low context style dimension. The aim of this paper is to develop and validate a conceptual model for capturing the moderating role of national culture on video conferencing usage. This aim is met by measuring the moderating effect of high/low context style on the effect of social presence on the perceived usefulness and ease of use of video conferencing for virtual teams in Jordan.

Conceptual Model: This study adapts part of [51] model as a basis for developing a new model. [51] extended the original Technology Acceptance Model (TAM) theory by hypothesizing that social presence could have a direct effect on the perceived usefulness and ease of use of e-mail and v-mail. The TAM theory was originally developed by [52] and is defined as “an information systems theory that models how users come to accept and use a technology”. It is used to study an individual's acceptance and adoption of a technology and information system and to elucidate computer usage behavior. Video conferencing technology provides a high social presence through its support of visual cues [53]. Therefore, social presence is associated with the nature of video conferencing and could be moderated by high/low context styles. According to [54], a moderator variable is a variable that can change (i.e., strengthen or weaken) the effect of an independent variable on a dependent variable. Researchers have indicated that culture has an important indirect or moderating effect on technology acceptance [55]. The TAM theory is therefore an essential part of the present examination. In the same way, [56] also state the importance of investigating the role of culture in CMC users' social presence. These authors consider high/low context style to be more influential than other cultural dimensions. As asserted by [20], that factor is the most effective at influencing social presence during communication among virtual teams.

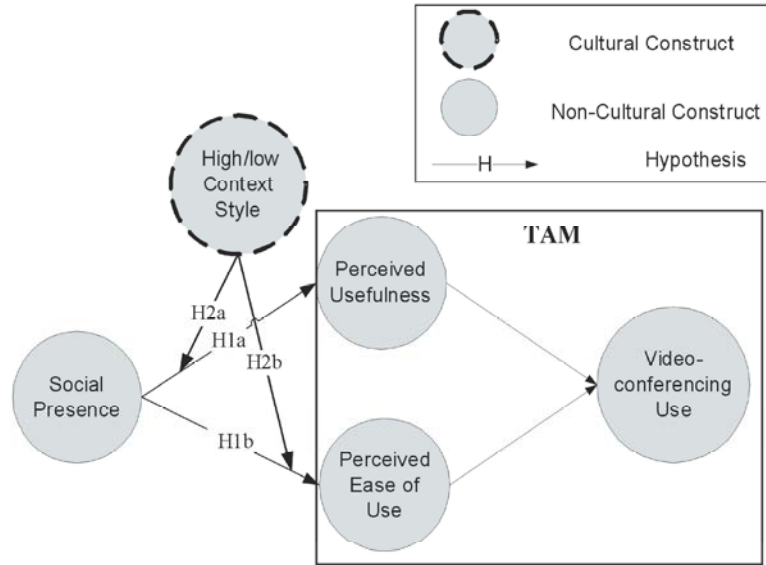


Fig. 1: Proposed conceptual model

The proposed conceptual model integrates the high/low context style dimension to measure its moderating impact on the direct effect of social presence on perceived usefulness and ease of use of video conferencing, as shown in Figure 1.

Hypotheses: Four hypotheses are tested in this study:

H1a: Social presence has a direct positive effect on users' perceived usefulness of video conferencing.

H2a: High/low context style positively moderates the effect of social presence on users' perceived usefulness of video conferencing.

H1b: Social presence has a direct positive effect on users' perceived ease of use for video conferencing.

H2b: High/low context style positively moderates the effect of social presence on users' perceived ease of use for video conferencing.

Method /Instrument/Sample: This study uses a quantitative approach by adopting a survey to measure the impact of national culture on CMC adoption, as suggested by [57]. This approach is suitable when the variables to be surveyed have been explored in previous studies [58]. A non-structured questionnaire was used for the data collection because it allows respondents to express their values, beliefs and attitudes [58].

The questions were adapted from several previous studies, including [59] study on high/low context style, [60] investigation of social presence, [52] study on perceived usefulness and ease of use. Some modifications were made to adapt these questions to this study.

Only manufacturing firms were sampled to control for the variance in responses that could be caused by the structural differences of manufacturing and non-manufacturing firms. In organizational contexts and especially in a manufacturing context, cultural values have the largest impact on knowledge sharing [61]. Video conferencing is becoming an effective tool for sharing knowledge about manufacturing processes [11].

A cross-sectional design was used to measure cultural values that have remained relatively stable in recent years [62, 63]. Eighteen hundred questionnaires were hand-distributed purposively to knowledge workers in 43 Jordanian manufacturing firms that were selected between April 5 and July 18, 2011. The return rate was 24.1% (434 questionnaires). The number of returned questionnaires (samples) meets the sample size requirement for this study because [54, 64] suggests that 385 samples are satisfactory for a population of 10,000.

Data Analysis

Scale Reliability Testing: Cronbach's alpha values ranged from 0.832 to 0.930 for the social presence, high/low context style and perceived usefulness scales.

Following [65], these results are within the preferable level of reliability. The perceived ease of use scale is considered to be within acceptable levels, with values ranging from 0.766 to 0.921. Therefore, these scales are considered reliable.

Exploratory Factor Analysis (EFA): In this paper, EFA is used with Principal Component Analysis (PCA) to evaluate construct validity. The Varimax rotation method is used to detect any low loading and/or double loading item(s) and the threshold Eigenvalue used is 1.0 [66]. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity (BTS) are also used. The KMO value is high at 0.838 and the BTS results reflect a significant result of less than 0.05. Therefore, EFA is deemed appropriate for this study.

As shown in Table 1, rotated component testing reveals that neither low loading nor double loading was detected. There is no need to eliminate any item(s) from the EFA. High item loadings appeared only within each item after rotation, thus supporting validity. Thus, all constructs are valid and each item measures a unique attribute of the concept.

Hypotheses Testing: This study uses hierarchical multiple regressions to test the hypotheses. The results for H1a and H2a appear in Table 2:

The results for H1a (shown in Table 2) indicate that the R-square for the model is 0.058, indicating that 5.8% of the variance in perceived usefulness can be explained by social presence. The statistical value $F = 21.863$ is significant at $\alpha < 0.05$. The effect of social presence on a user's perception of the usefulness of video conferencing is positive ($\beta = 0.223$), which is consistent with the hypothesized effect. Therefore, the hypothesis is supported.

The results for H2a (shown in Table 2) indicate that the R-square for the model increased from 0.024 to 0.082, indicating that 8.2% of the variance in the perceived usefulness of video conferencing usage can be explained by social presence, high/low context style and the interaction of social presence and high/low context style. The statistical value $F = 10.578$ is significant at $\alpha < 0.05$. The effect of the interaction of social presence and high/low context style is negative ($\beta = -0.147$). Therefore, as a moderator, high/low context style significantly decreases the perceived usefulness from ($\beta = 0.223$)

Table 1: Rotated component matrix and communalities

Item	Component				Communalities
	HLCS	SP	PU	PEOU	
HLCS 1	.890				.797
HLCS 2	.862				.747
HLCS 3	.829				.694
HLCS 4	.927				.861
HLCS 5	.774				.602
HLCS 6	.800				.641
HLCS 7	.795				.635
SP 1		.811			.673
SP 2		.819			.699
SP 3		.715			.539
SP 4		.765			.610
SP 5		.707			.549
PU 1			.893		.852
PU 2			.925		.905
PU 3			.886		.839
PEOU 1				.860	.774
PEOU 2				.729	.593
PEOU 3				.802	.729
Eigen values	4.986	4.451	1.926	1.374	
Percentage of total variance	27.701	24.729	10.698	7.636	

Note: HLCS = High/Low Context Style, SP = Social Presence, PU = Perceived Usefulness, PEOU = Perceived Ease of Use

Table 2: Summary of hierarchical regression analysis for variables predicting perceived usefulness

Independent variable	Model H1a		Model H2a	
	B	SE B	B	SE B
SP	.223***	.048	.219***	.047
HLCS			-.343***	.116
SP X HLCS			-.147***	.048
R2	0.058	0.082		
F	21.863***	10.578***		

Note: SP = Social Presence, HLCS = High/Low Context Style, SP X HLCS = the interaction of Social Presence and High/Low Context Style
Significance levels are *** p < .001, ** p < .01, * p < .05

Table 3: Summary of hierarchical regression analysis for variables predicting perceived ease of use

Independent variable	Model H1b		Model H2b	
	B	SE B	B	SE B
SP	.140***	.035	.137***	.035
HLCS			-.216*	.087
SP X HLCS			-.081*	.036
R2	0.042	0.059		
F	15.641***	7.363***		

Note: SP = Social Presence, HLCS = High/Low Context Style, SP X HLCS = the interaction of Social Presence and High/Low Context Style
Significance levels are *** p < .001, ** p < .01, * p < .05

to ($\beta = 0.219$), which is the opposite of the hypothesized effect. Therefore, the reverse of the hypothesis is supported.

The results for H1b (shown in Table 3) indicate similar conclusions as the results of H1a but yield different values. The R-square was 0.042, indicating a variance of 4.2%. The statistical value $F = 15.641$ is significant at $\alpha < 0.05$. Social presence has a significantly positive effect ($\beta = 0.140$) on user's perceived ease of use for video conferencing, which is consistent with the hypothesized effect. Thus, the hypothesis is supported.

The results for H2b (shown in Table 3) show that the R-square for the model increased by 0.017, indicating that 5.9% of variance in perceived ease of use can be explained by the model. The statistical value $F = 7.363$ is significant at $\alpha < 0.05$. High/low context style is a significant moderator with a negative effect ($\beta = -0.081$) on perceived ease of use. Hence, high/low context style significantly decreases the effect on perceived ease of use from $\beta = 0.140$ to $\beta = 0.137$, which is the opposite of the hypothesized effect. Therefore, the reverse of the hypothesis is supported.

Findings: These findings confirm the positive influence of social presence on the perceived usefulness and ease of use of videoconferencing. The findings provide

evidence that videoconferencing is capable of providing a high social presence, as asserted by [26]. Jordanians were expected to have a high context culture. This result was confirmed and is consistent with findings obtained by [19, 42, 43, 44, 45, 46, 48, 49 and 50]. The results of the analysis show that the mean of the high/low context style scale appears to be high (average mean high/low context style = 3.33), indicating that the respondents are from a high context culture. Although this is evident from the findings, the effect of these cultural values does not appear to either inhibit or motivate users' perceptions of the ease of use or usefulness of video conferencing. In this study, the confirmation of trust importance in Jordan's high context culture is consistent with [19, 46] findings on other cultures in the Middle East.

The significance of these findings lies in the unexpected reverse effect of high/low context style. This shows that there may be other factors that affect the results (such as organizational culture or trust) that should be explored in further research. The importance of trust along with social presence in high context cultures (especially in communications) should be examined because trust can change users' behaviors in such cultures, as asserted by [67]. Therefore, cultures with a high context style do not necessarily display the expected effect of high context style characteristics, which typically

increase the effect of social presence. As concluded by [68], the role of social presence alone is not sufficient. However, although CMC is one tool for building trust among virtual teams [16, 19] building such trust takes time. Building relationships and trust with external groups is difficult in Arab cultures [69] primarily because Arabic cultural values prioritize building in-group consensus within intra-organizational environments.

In conclusion, these findings show that it is necessary to build relationships and trust to encourage the adoption of video conferencing. Therefore, manufacturing firms should create thoughtful strategies to build trust among virtual teams through video conferencing adoption. Video conferencing is emerging as an effective and core technology of collaboration that allows manufacturing firms to achieve distributed processes [11].

Theoretical and Practical Implications: This study has both theoretical and practical implications. From the theoretical perspective, the developed conceptual model reveals relationships and could be adapted to articulate different relationships in future research. This study provides a better understanding of the differences between simple virtual teams and global virtual teams that use video conferencing. The study has also classified Jordan as a high context culture based on empirical data, taking into consideration the importance of communication goals and the communication context. The conceptual model articulates the impact of high/low context style on video conferencing usage with the objective of knowledge sharing. However, the new conceptual model is also applicable to other media than video conferencing.

From a practical perspective, this new conceptual model suggests that organization leaders should adopt knowledge sharing initiatives in general and knowledge sharing technologies in particular. Video conferencing can enhance planning strategies and communication for virtual teams at Jordanian manufacturing firms. This study provides evidence that the high/low context style dimension slightly reduces social presence. However, this does not create a major obstacle to the perception of video conferencing as useful or easy to use. Therefore, our findings suggest adjusting the adoption of video conferencing to satisfy virtual teams' needs to share knowledge more effectively within Jordanian manufacturing firms. Virtual teams have perceived the social presence provided by video conferencing as a positive indicator of its usefulness and ease of use.

CONCLUSION AND FUTURE WORK

This study validates a conceptual model for investigating the moderating impact of the high/low context style on video conferencing usage for knowledge sharing in manufacturing firms in Jordan. The findings show that a high/low context style negatively moderated the effect of social presence on perceived usefulness and perceived ease of use. This implies that the adoption of video conferencing is influenced by national culture, which is worthy of being investigated further in various contexts and technologies. The conceptual model is applicable to other studies with different scopes because measuring national culture values in different countries (cultures) could lead to different findings. Future research should measure the impact of organizational culture and trust and social presence in high context cultures and should combine both quantitative and qualitative approaches. Other statistical software packages may be valuable in future research for validating the conceptual model proposed by this study. For instance, methods such as PLS or SEM and packages such as AMOS provide different types of analysis output.

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