# A Survey of Fundamental Theories, Models and Perspectives on Computer-Mediated Communication

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**Abstract**
*In this paper I explore some fundamental theories, models and perspectives used by scholars in communication studies as frameworks to understand and discuss the field of computer-mediated communication, which is an offshoot of mediated communication aspect of the communication studies. In my approach, I discuss the academic landscape of communication technology, with a view of locating the concept, nature and scope of CMC. Specifically, I present some of the notable perspectives, models and theories with which scholars in new (digital) media studies have used in explaining trends of adoption, uses and social implications of communication technology against the backdrop of some media constraints and affordances as discussed in select journal publications, while I use schemas to explain the concept where necessary. It is no doubt that this approach will not only introduce the fundamental theories of computer mediated communication within the purview of communication studies, but also advance scholarship in the field of CMC, which has been ongoing as far back as 1970s (Herring, 1994), but which has not been significantly studied in Nigeria and by extension Africa beyond the narrow confines of an oft-quoted theory of media effects.*

**Introduction**
The last decade has witnessed a significant shift of Computer Mediated Communication (hereafter, CMC) into the mainstream of scholarship in communication studies and the allied disciplines like sociology, psychology and composition studies (to name but a few). This shift has been attributed to the increasing levels of penetration of practical CMC in the general population, thereby affirming its place among scholars the world over. For instance, it is estimated that the number of people having access to the Internet at home has increased from 1.4 billion in 2009 to almost 1.6 billion in 2010. And of the 226 million new Internet users in 2010, 162 million would be from the developing countries where Internet users grew at a higher rate (International Telecommunications Union, 2010). Thus, the global digital divide seems to be shrinking, especially with the accelerated introduction of mobile phones to populations in developing countries, where of the 5.3 billion global subscriber base 3.8 billion would be in the developing world, where Africa is categorized. Though issues of access to Information and Communication Technologies still pose significant challenges, stemming principally from the low literacy level and per capital income, it has been estimated that penetration levels in developing countries remain low at 4.4% compared to 24.6% in developed countries.

Be that as it may, crucial to the understanding of CMC is the concept of "persistent conversation", which is described as:

> …the transposition of ordinarily ephemeral conversation into the potentially persistent digital medium. Persistent conversations occur via instant messaging, text and voice chat, email, blogs, web boards, MOOs, graphical and 3D virtual environments, gaming systems, video sharing sites, document annotation systems, mobile phone texting, etc. Such communication is persistent in that it leaves a digital trace, and the trace in turn affords new uses. It permits conversations to be saved, visualized, browsed, searched, replayed, and restructured. Persistence also means that conversations need not be synchronous: they can be asynchronous (stretching out over hours or days) or supersynchronous (with multiple parties 'talking' at the same time). Finally, the creation of persistent and potentially permanent records from what was once an ephemeral process raises a variety of social and ethical issues (Erickson and Herring, 2007).

The increased importance of CMC in general, and of text-based CMC in particular, in the lives of individuals, led to challenges such as information overload (Jones, Ravid, & Rafaeli, 2004; Whittaker & Sidner, 1996; Zeldes, Sward, & Louchheim, 2007), and new types of distractions and interruptions (Gonzalez & Mark, 2004; Mark, Gonzalez, & Harris, 2005; Russell, Purvis, & Banks, 2007). These challenges are interesting from a research point of view since they represent classical communication challenges that have been researched in the past, that now need to be re-examined in light of the introduction of novel computer-mediated communication channels.

In this paper, I attempt a survey of computer-mediated communication, which is an offshoot of mediated communication aspect of the communication studies. In my approach, I begin with an overview of the communication technology, and then briefly discuss the nature and scope of CMC. Specifically, I present some of the notable perspectives, models and theories with which scholars in new (digital) media studies have used in explaining trends of adoption, uses and social implications of communication technology against the backdrop of some media constraints and affordances. Thus, contributions to peer-reviewed journals such as *Journal of Computer Mediated Communication, Journal of Communication, Communication Research* as well as other related publications on CMC are explored, while I use schematic diagram to explain the concept where necessary. It is no doubt that this approach will not only introduce the fundamental theories of computer mediated communication within the purview of communication studies, but also advance the scope of its readers to the field of CMC, which has been ongoing as far back as 1970s (Herring, 1994), but which has not been significantly studied in Nigeria and by extension Africa beyond the narrow confines of an oft-quoted theory of media effects in spite of the ever increasing adoption of the media technology.

**The Nature and Scope of Computer-Mediated Communication**
A popular definition of CMC that, pragmatically and in light of the rapidly changing nature of communication technologies, does not specify forms, describes it as "the process by which people create, exchange, and perceive information using networked telecommunications systems that facilitate encoding, transmitting, and decoding messages" (December, 1996). This seems to encompass both the delivery mechanisms, derived from communication theory, and the

importance of the interaction of people that the technologies and processes mediate (Naughton, 2000). It also provides for great flexibility in approaches to researching CMC, as "studies of CMC can view this process from a variety of interdisciplinary theoretical underpinnings by focusing on some combination of people, technology, processes, or effects" (December, 1997).

The social aspects of the communication, rather than the hardware or software, form the basis of the more recent definitions. One of the most overt examples of the move away from a technological focus in definitions describes it thus: "CMC, of course, is not just a tool; it is at once technology, medium, and engine of social relations. It not only structures social relations, it is the space within which the relations occur and the tool that individuals use to enter that space" (Jones, 1995). According to Shaft, Martin and Gay (2001), CMC is human-to-human communication using networked computer environments to facilitate interaction. It is an umbrella term for all kinds of interpersonal (private and public) communication carried out on the Internet by e-mail, instant messaging systems, mailing lists, newsgroups, web discussion boards, Internet Relay Chat, and web chat channels (cf. Herring 2001, 2004). CMC is different from mediated communication because the human-to-human interaction is interactive. One is both a sender and receiver of communication. Individuals involved in the computer-mediated interaction act simultaneously as source and receiver. Computer, connected via the Internet or a computer network, act as the channel of communication. Because the interaction is personal, the message can consist of anything the two people wish to discuss; sports, music, movies, politics, or even plans for a date, as a result of this *interactivity*, feedback naturally occurs, in some CMC systems, through the exchange of real time messages (see Fig. 1).
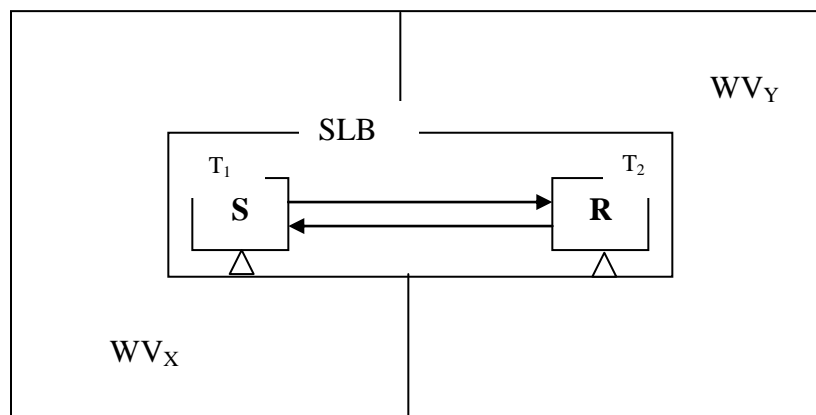


**Fig. 1: Schematic diagram of interpersonal computer-mediated communication**

Figure 1 indicates interactants S-R negotiating within the two frames of shared linguistic background (SLB) and mutually exclusive worldviews (WV). Negotiation takes place through the adoption and appropriation of similar or dissimilar independent technologies (T), for an effective communication to take place.

Apart from interactivity, other important concepts of the CMC which have implications on how it is perceived and studied include the *synchronicity* or *asynchronicity* of the media technology; i.e. whether it affords real-time discourse, the *orality* or *textuality* of the communicative pattern; i.e. whether it is akin to oral discourse or to written texts, or whether it is a hybrid, the *convergence* i.e. whether it affords multiple media (multimedia) and lastly, the *degree of*

*involvement* from users or *level of participatory*, which focuses on whether users can afford to be active or passive in participation (*lurking*). It is against these as well as other unique features, stated as constraints and affordances, that CMC is studied and theorized.

**Constraints and Affordances of the Media Technology**
This issue of media constraint/affordance is quite relevant to our discussion of the theories of CMC because some of these constraints and media affordances have implications on the theories with which CMC is being studied. From the literature, 12 constraints are identified. I will discuss each constraint and how they relate to CMC studies with special reference to some of the popular CMC systems. The first eight is in relation with the *collaborative theory of language use* advanced by Clark (1996), Clark and Wilke-Gibbs (1986) and Clark and Brennan (1991) 'grounding' concept of communication effectiveness. These are summarily presented in Table 1.

| No. | Constraint | Interpretation | Communicative Cost | Popular CMC Media |
|---|---|---|---|---|
| 1. | Copresence | This is that CMC interactants are communicating within the same physical environment. | Interactants have an understanding cost which requires them, if necessary, to explain what's going on around them to each other. | 1. IM (only when interactants share the same office/ workstation) |
| 2. | Visibility | This is that communicators see each other while communicating. | Communication is increased especially when non verbal cues are allowed. But may also increase redundancy. | 1. IM (only when webcam is enabled). 2. Video Conferencing. |
| 3. | Audibility | This is that speech is used to communicate. | Prone to ambient noise and eating. But highly useful in conveying relational messages thru intonational cues. To compensate the cost, interactants use abbronyms (homophonic & non homophonic, emoticons, RPMs, or vext cf. Oni 2007; Oni and Oke 2010). | 1. GSM voice call/voice mail. 2. VoIP (using Skype$^{TM}$ or Yahoo! Beta IM progam). |
| 4. | Cotemporality | This is that production and comprehension take place in synchrony. | No feedback delays hence increase in comprehension. | 1. Chat & ICQ (IM is quasi-synchronous, cf. David & ?) |
| 5. | Simultaneity | This is that production and comprehension are | Though no feedback delay, but addressees' | 1. Chat (Not in IM where there |

| | | | | |
|---|---|---|---|---|
| | | simultaneous (this use of *simultaneity* differs from the use of the term to refer to multitasking; Cameron & Webster, 2005, p. 90). This differs from cotemporality in that production and comprehension can occur at the same time. | behavior can affect production. | is 'waiting' usually leading to turn disruption and repairs). 2. GSM voice call, video call |
| 6. | Sequentiality | This is that turns go in sequence. Sequentiality helps prevent confusion about what is responding to what. | No delays and there is increase in comprehension. | 1. Chat & ICQ 2. IM 3. E-mail |
| 7. | Reviewability | This is that senders can review communication before it reaches addressees. | It promotes message clarification by the sender, thus reduction in ambiguity or failure in communication. | 1. IM 2. E-mail 3. GSM SMS (and other text-base CMC media) 4. Blog post |
| 8. | Reviseability | This is that senders can privately revise messages before addressees encounter them. | Errors are not permitted as senders are more accountable for messages sent. | 1. GSM SMS 2. Blog post 3. Email 4. IM (partially though) |

**Table 1: Showing some of the constraints of the CMC media**

In addition to these constraints, there are several additional media constraints inspired by Hård af Segerstad and Ljungstrand (2002).These are the *multimodality constraint* where information is conveyed in multiple ways, such as voice, face, and body; the *locatability constraint* where communicators are aware of each other's position in the environment; the *anonymity constraint* where communication can take place under anonymous conditions, and the *synchronicity awareness constraint* in which case participants know whether conversation is synchronous or not.

## 4     CMC Theories from Relating Online Dimension

The two major dimensions to theorizing CMC are: (i) online interaction in text-based and multimedia environments and (ii) communication technology adoption, uses and appropriation.
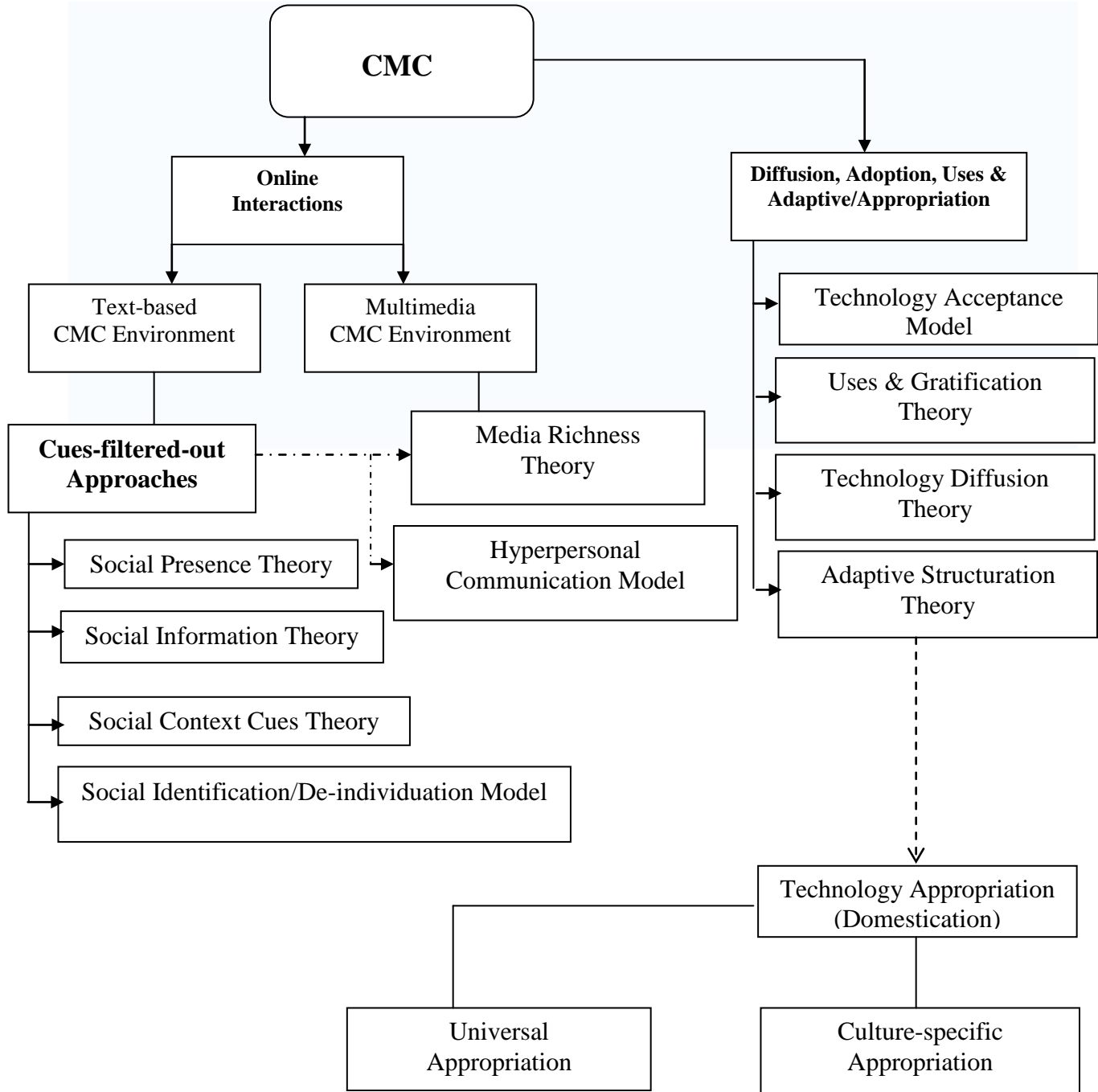
**Fig. 2: Schema showing fundamental theories for CMC studies**

As far as online interaction in text-based and multimedia environments is concerned, perspectives and theories are drawn from the characteristics of the CMC media in relation to the aforementioned constraints and affordances. Apart from this, some of the theories do compare what obtains in face-to-face interactions with online interactions. The earliest approach to theorizing CMC in text-based environment is the cues-filtered-out, while uses and gratification are often hinged on in the other category. Figure 2 shows the schematic diagram of this trend as observed in the literature.

**Cues Filtered Out Approaches**
In the study of computer-mediated interactions, major perspectives focus on comparing the context of CMC with face-to-face (F2F, or interpersonal communication). Primarily, the framework presupposes that CMC does not allow a full array of non verbal behaviour to be utilized. Although, dated CMC studies held strongly that CMC would not even allow any of the nonverbal cues; that it is predominantly text-based and therefore a "lean medium" in terms of information exchange, which is unsuitable for carrying out tasks or social relational functions that requires rich, detailed and nuanced communication.

Thus, with this notion came the "cues-filtered out" perspective (Culnan & Markus 1987; Parks and Floyd, 1996). The cues-filtered out (CFO) perspective, an umbrella term for several related theories (e.g. Social Presence Theory [SPT]; Short, William & Christie, 1976) which points that the lack of non verbal cues in CMC causes it to be more impersonal than face-to-face (FtF) interaction. Media Richness Theory, MRT (Daft & Hangel, 1986) also focuses on CMC's predominantly lexical mode of interaction, deeming it a lean medium compared to FTF interaction, which has multiple cues and a high degree of personalization.

**Media Richness**
Media richness theory argues that task performance will be improved when capabilities of the media (cues, feedback, personal focus, and language variety) are matched to task ambivalence and uncertainty. In this approach, face-to-face communication is considered the richest communication medium in a hierarchy followed by the telephone, electronic mail, letter, note, memo, special report, and finally, flier and bulletin. Some observations and predictions are made regarding the propriety and efficiency of different media. Specifically, this theory suggests that performance in equivocal tasks would be better when using "rich" media. According to this theory, in the case of unequivocal tasks, performance would be better if leaner media are used. Unfortunately, empirical data to support media richness theory fall somewhat short (Dennis, Kinney, & Hung, 1999; Dennis & Valacich, 1999; El-Shinnawy & Markus, 1997; Morris & Ogan, 1996; Riva, 2002). An interesting theory which developed from a critical examination of media richness theory is the *theory of media synchronicity* (Dennis & Valacich, 1999) which proposes that media choice is influenced by five media capabilities (feedback, symbol variety, parallelism, rehearsability, reprocessability) to support two fundamental communication processes (conveyance and convergence).

**Social Information Processing**
The social information processing (SIP) theory of CMC interaction (Walther, 1992; Walther & Parks, 2002) provides a more constructive analysis of the limitations of online communication. According to SIP, users of CMC find alternative methods to reduce interpersonal uncertainty, to form impressions or to develop affinity, and that they perform these tasks using whatever cues the medium allows them. SIP claims that the apparent superiority of face-to-face communication is a result of the fact that CMC is often slower than face-to-face communication. But, when these time restrictions are lifted, and users are provided with enough time to exchange online messages, they are able to reach levels of impression and relational development comparable with those achieved in face-to-face communication (Walther, Anderson, & Park, 1994). This fact that time has such a central role in the quality and effectiveness of online communication,

underlines the importance of chronemics in online communication (Walther & Tidwell, 1995). Walther (1996) as well as Herring (1999) have taken this concept one step further, showing how CMC users leverage the unique attributes of specific CMC media to achieve communication goals that go beyond the interpersonal levels typically achieved in face-to-face communication. These findings might be surprising in light of the dire descriptions of the limitations of CMC in relation to face-to-face interactions, but are not surprising in light of the incredible success and penetration of certain forms of CMC.

It is thus clear that face-to-face interactions are neither an ideal nor should be treated as an ultimate standard. Social cognition develops in a variety of loci/media. Previous research has already contested the standard of face-to-face asserting that interpersonal interactions and social influences affect media choice (Fulk, Schmitz, & Steinfield, 1990), and online relationships have been shown to be healthy, a complement to face-to-face relationships (Peris et al., 2002), and based on unique information seeking strategies (Ramirez Jr, Walther, Burgoon, & Sunnafrank, 2002). With the Internet there is the possibility that face-to-face be demoted from its ostensibly classic preordained position/status as ultimate yardstick. The Internet itself is a plurality of media operated by diverse technologies which constitute a culture or a social space in its own right. In fact, the "richness" of CMC is a variable, not a characteristic.

### Social Identification/De-individualization Model

Also, due to the burgeoning use of the Internet for social purposes, observations of online encounters have shown that people can have intimate relationships in the CMC environment. According to Postumes et al. (1998), it is exactly because there are so few nonverbal cues to process in online environments that people more actively seek out "norms" of behaviour in order to find acceptance among the other participants. For instance, during a chat session abbronymizations, such as LOL for "laugh out loud" are used, the SIDE model predicts that you are likely to pick up this norm for yourself. In doing so, you are likely to appear more attractive to those around you and thus have a better chance of initiating relationships. The SIDE model asserts that you are more likely to comply with a social role than worry about asserting your individual identity. This is to say that people learn to play by the rules, as it were, and in doing so increase their attractiveness to other interactants. In text-based interaction, there is less individuating information available to communicators. In lieu of relying on distinctions to mark us as attractive, the SIDE model argues that it is our similarities that foster attachment among people online.

In short, the SIDE model predicts that people will set aside personal identity and adopt the appropriate social identity in order to find acceptance among others. Perceived similarity has long been held to be a strong predictor of individual attraction (Trenholm & Jensen, 2000), and it seems to be a key in explaining the SIDE model's effects in cyberspace. More recently, researchers have found support for the SIDE model in fostering resistance against certain outgroups. For instance, they found that students were more likely to find support among their peers and consequently express opinions deemed unacceptable by faculty when communicating through computer-mediated channels (Spears, Lea, Cornelliussen, Postumes, & Harr, 2002). From the SIDE perspective, people who conduct relationships online must communicate enough common ground with one another that the parties involved are interested in sustaining relational ties.

**Hyper-personal Communication Model**
Another theory articulated as an extension of both SIDE and SIP perspectives is Walther's (1996) Hyper-personal Communication Model (HCM). This introduces factors that explain how the CMC environment can allow the individual to experience a level of closeness above the norm in FtF condition. According to this theory, CMC is typically characterized (or constrained) by reduced visual, auditory, and contextual cues, such as social status cues. One important consequence of CMC's reduced cues is that CMC interactants, as noticed, become less concerned about how others perceive them and thus they feel fewer inhibitions in disclosing themselves (Joinsen 2001).

Walther describes three necessary conditions for hyper personal communication to occur, these are;
1. The receiver's idealization of the other due to over-attributions, where by the receiver assigns magnified positive values to his or her partners;
2. Sender's selective self presentation, in which the sender has the advantage of being able to optimally edit his message before transmitting.
3. Feedback loop or reciprocity of interactions, whereby the interplay of idealization and self presentation becomes a dynamic process and creates a self-reinforcing cycle.

Another plausible consequence of CMC's reduced cues is that the range of possible uncertainty reduction strategies is limited. In face-to-face settings, one can reduce uncertainty about a communication partner in many different ways, including observing the partner and asking others about him or her. However, in CMC, the range of uncertainty reduction strategies is often confined to interactive strategies, such as direct questioning, self-disclosure and profile updating. Although these direct strategies may be regarded impolite in face-to-face settings, in CMC they may be more accepted and, as a result, more frequently used (Tidwell & Walther, 2002). If these conditions are met, people can develop a sense of closeness and rapport in their CMC interactions.

**4.6    Social Context Cues Theory**
According to Sproull and Kiesler (1986), social context cues serve as indicators of appropriate behavior. They govern both contact, telling us with whom we should and should not communicate, and content, regulating what kinds of information we should and should not disclose. Some social context cues include geographic, organizational, and situational variables. Sproull and Kiesler (1986), in their study on email use in organizational communication, found that the short supply of social context cues has an effect on the nature of human behaviour in mediated contexts. Kiesler, Siegel, and McGuire (1984) argue that the lack of social context cues leads to feelings of anonymity, reduced self-regulation, and reduced self-awareness. From one perspective, this state can foster greater personal independence, getting one out from under the thumb of social control. On the other hand, it can foster the flouting of social standards, leading one to utter things that are later regretted. In short, the short supply of social context cues can create perceptions of impersonal replies and impersonal interpretations of messages.

**5.      Theories of Diffusion of Innovations, Adoption, Uses and Appropriation in CMC**
**5.1      Technology Acceptance Model (TAM)**
Among the various efforts to understand the process of user acceptance of information and communication technologies (ICTs), the TAM, introduced by Davis (1986), is one of the most respected theoretical frameworks. The model aims not only to explain key factors of user acceptance of ICTs but also to predict the relative importance of such factors (Davis, Bagozzi & Warshaw 1989). Further, the model attempts to derive the determinants of technology acceptance explaining user behavior across a broad range of end-user applications, while trying to be parsimonious and theoretically justified (Davis et al., 1989). Drawn from the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) and the Theory of Planned Behaviour (TPB) (Ajzen, 1991; Ajzen & Fishbein, 1980) in socio-psychology, the TAM explores the factors that affect behavioural intention to use information or computer systems, and suggests a causal linkage between two key variables—*perceived usefulness* and *perceived ease of use*— and users' attitudes, behavioural intentions, and actual system adoption and use (Davis, 1986).

Like Shannon and Weaver's 1948 model of communication out of which many other communication theories stem out, TAM is equally linked with such models as the Unified Theory of Acceptance and Use of Technology (UTAUT) and Model of Adoption of Technology in the Household (MATH). While the UTAUT recognizes demo-psychographic indices such as gender, age, experience, and voluntariness of use as moderating variables in the process of ICT acceptance and use, MATH sheds further theoretical light on the acceptance and use of ICTs, given that ICT acceptance in many cases takes place in individual and household settings instead of organizational contexts. Based on the TPB, the MATH presents three main constructs— attitudinal beliefs, normative beliefs, and control beliefs—and their roles in technology adoption (Brown & Venkatesh, 2005). By adding the factors of family dynamics and fun in ICT adoption, the MATH has extended the realm of ICT acceptance and use beyond the workplace.

Although the TAM is a well-documented model for explaining users' technology acceptance, there exist two weaknesses in the model. The first is its lack of explicit inclusion of antecedent variables that influence perceived ease of use and perceived usefulness (Dishaw & Strong, 1999) because of the original model's intended generality and parsimony. The second weakness of the TAM is that it assumes ICTs as given and focuses on the factors that affect technology acceptance and use, yet lacks an explanation of why people are accepting and using specific ICTs.

**5.2      Uses and Gratification Theory**
One compelling complementary theoretical framework to overcome the TAM's limitations is the uses and gratification approach (Palmgreen, 1984; Palmgreen, Wenner, & Rosengren, 1985; Rubin, 1986, 1994), which has been widely used for decades in the area of media effects. Although the approach focuses primarily on why and how people use entertainment media, its emphasis on activities and choices of individual media users makes it suitable for application to the adoption and use of other technologies. The approach emphasizes the role of people's initiative and activity, and consequently focuses on motivation—which can be defined as a general disposition that influences the actions people take to fulfill a need or want (Rubin, 1993)—as a factor that accounts for their selective choice and subjective interpretation of media messages. Because people are said to be actively aware of their choices of media and technology,

they are assumed to exhibit motivations to use particular media or technology (Infante, Rancer, & Womack, 1993). Put differently, the approach views motivation as driven by felt needs and individual differences (Rosengren, 1974) and as playing an important role in increasing people's behavioral intention and actual use of media (Park et al., 2007).

Research utilizing the uses and gratification approach has been widely applied to a variety of new media and communication technologies, including the video cassette recorder (VCR) (Cohen, Levy, & Golden, 1988; Rubin & Bantz, 1987), cable television (Bantz, 1982), bulletin board systems (Garramone, Harris, & Anderson, 1986; Rafaeli, 1986), the World Wide Web (Ferguson & Perse, 2000), online services (Lin, 1999), the GSM and the Internet in general (Flanagin and Metzger, 2001; Papacharissi & Rubin, 2000).

In the case of Internet use in particular, researchers claimed that the uses and gratification approach could be a productive means for understanding the relationship between individual users and the technology (e.g., Newhagen & Rafaeli, 1996). That is, considering the approach's applicability in the field of mass media, it has been posited that the approach would be well suited for examining CMC including Internet use (e.g., Flanagin & Metzger, 2001; Morris & Ogan, 1996; Newhagen & Rafaeli, 1996; Rubin, 2002; Ruggiero, 2000; Williams, Strover, & Grant, 1994). Not surprisingly, the study of the telephone based on the uses and gratification approach has focused on identifying the key motivations for its use. For instance, Keller (1977) identified two broad motivations: intrinsic (or social) and instrumental (or task-oriented) uses. According to the study, intrinsic motivations for telephone use refer to calls for socializing including chatting, gossiping, and maintaining family contacts, while instrumental motivations include calls for utility such as making appointments, ordering products, or seeking information. Park (2010), (citing Singer, 1981 and Fischer, 1988) also distinguished between the ''social'' and the ''practical'' uses of the telephone, while Claisse and Rowe (1987) also cited in Park (2010) categorized telephone uses as having ''functional'' and ''relational'' motives.

Although the terms for the motivations for telephone use are slightly different from each other, all of these studies generally categorize the motivations as ''social'' and ''instrumental'' functions. Williams, Dordick, & Jesuale (1985) added the motivation of fun or entertainment, while Dimmick et al. (1994) extended the motivations with the ''reassurance'' function, the use of the telephone to fulfill one's psychological needs for feeling secure. Further, O'Keefe and Sulanowski (1995) claimed that telephones become a mixed mass media and interpersonal communication channel, listing sociability, entertainment, acquisition, and time management as key motivations for using telephones. In addition, Leung and Wei (2000) investigated the uses of cell phones and identified fashion/status, affection/sociability, relaxation, mobility, and immediate access as key motivations. In an extensive review of studies about telephone use, LaRose (1999) claimed that the uses and gratification approach sheds light on interpersonal communication between two parties by identifying interpersonal communication motives.

For instance, Rubin, Perse, and Barbato (1988) classified six dimensions of interpersonal communication motives including pleasure, affection, social inclusion, escape, relaxation, and control. LaRose (1999) also posited that the aforementioned functions of social and instrumental uses of the telephone can be connected to social learning theory (Bandura, 1977) in that people's learning experiences motivate and regulate their telephone behavior.

**Technology Diffusion, Appropriation and Adaptive Structuration Theories**
Another important theory for studying CMC is Roger's (1995) Diffusion of Innovation Theory (DOI). Diffusion, in this theory, is defined as the process through which an innovation is communicated and spread over time to members of a community. The communication process takes the form of a cumulative "S-shaped" curve starting slowly but accelerating to a take-off phase as more users accumulate, building ultimately to a plateau as the number of potential adopters becomes exhausted (Rogers 1995).

Additionally, Rogers predicts that there will be a group of adopters who are more prone to innovation and who are identifiable by key characteristics. Whereas Rogers theorizes that diffusion is a one-stage process through an "S-shaped" flow, appropriation extends diffusion to a more detailed view of the actual use of the adopted technology (Fichman, 2000). Thus insight into the adoption and diffusion of innovation provides a background for understanding the decision to purchase a technology, whereas appropriation seeks to explain the actual use of technology (see Sangwan & Pau (2005); Aoki & Downes 2003). However, inasmuch as diffusion theory provides a basis for understanding who will use a technology and how quickly it will diffuse through a population. Yet the actual manner of use of the technology is largely disregarded in diffusion studies and thus provides only a basis for studies and little in-depth understanding as to the actual appropriation of a technology.

**Adaptive Structuration Theory**
DeSanctis and Poole (1994) conducted much of the early theoretical work regarding appropriation of new information communication technologies. They propose the use of adaptive structuration theory (AST) as a method for examining process change resulting from the use of advanced information communication technologies (ICTs). AST stipulates that change can be examined by focusing on the structures that are created inherent to the technology and the structures that then result from human interaction with the technology. Thus, as defined by DeSanctis and Poole, appropriation of technology is an ongoing practice whereby people interact with technology and then actively select structures of use from a larger set of possibilities. They identify four aspects of the appropriation process under this definition: appropriation moves, faithfulness, instrumental uses and attitudes. In this framework, appropriation moves is the process of determining how a structure is used – directly, indirectly, in a modified manner, or negated. Faithfulness is the degree to which a structure is used in accordance with the intent of the technology's designers. By this definition, appropriation occurs at the intersection of technical design and social structures. As a view of appropriation this treats the relationship between production of technology and use in action as a production of socio-technical systems (Hiltz & Johnson, 1990). Some of the notable studies in this regard is CheNeau-Loquay (2000) and Horst (2006).

**Appropriation: The Place of Culture**
Media technology scholars have realized the fact that apart from the manufacturers' intended default use of certain media technologies, adopters do circumvent the norm an adapt media to different plans in their private uses. This is what is being referred to as appropriation. According to Bar, Pisani and Weber (2007) for a technology to evolve and become better adapted to its users needs and ever more important to their social and economic development, something more

than mere adoption is needed. The long-term, innovative effects occur when users appropriate the technology, when they make it their own and embed it within their lives. The appropriation process is fundamentally political: it is a battle for power over the configuration of a technological system and therefore the definition of who can use it, at what cost, under what conditions, for what purpose, and with what consequences. This confrontation is deeply creative and fuels a powerful innovation engine. Users re-invent the technology while they try out its features, tweak devices and applications so they better answer their needs, come up with different ways to use services, and develop new social, economic and political practices around the possibilities open by new technological systems.

While appropriation is important for all kinds of technologies, more importantly ICT, the concept, as I observe, oscillates between two paradigms: the *universal appropriation* of media technology and *culture-specific appropriation* of media technology. While the former addresses the default use of the media technology at all places and across all social strata/demography the world over, the latter centres around linear contextual or peculiar usage within an individual group or community of people. For instance, the manufacturer intend use for mobile phone is for both voice and text messaging (including voicemail service), however users' do "appropriate" the technology by flashing or beeping or missed calling, which have been observed to be of communicative value (cf. Donner 2007). A study have equally observe that during IM'ing on *Yahoo Messenger* (and other IM systems) Nigerians could only use 9 of the 54 emoticons in their interactions being the only universally intelligible options in the pool of emoticons (Oni & Shoki, 2008). In line with this perspective, users of the social network site in Nigeria have also been appropriating the media systems culture-specifically in their different individual or organizational engagements such as wall posting, expression of likes and identifying with a course, community, individual, religion and politics; some of which betray their cultural orientations and belief systems.

**Conclusion**

This survey of computer mediated communication theories, specifically from communication studies perspective, so far has shuttled between two important paradigms; the mass media effects theories and the technology acceptance/adoption approaches. While the semiotic approach (base on research output) is graphically hinted upon as a contributive approach to the study of computer-mediated interactions. This review thus covers vital perspectives used in earlier CMC studies such as the CFO, SIP, SIDE, DOI, etc. while detailed discussion has also been given to the media effect theory, mainly uses and gratification theory, diffusion of innovation theory and the technology acceptance model as three important approaches to the study of computer-mediated communications.

More important in this paper is the presentation of some media constraints distilled from the collaborative theory of language use and grounding concept in effective communication. The relationship between the CMC systems and these affordances are stressed in tabular presentation. It is however hoped that the models presented in this paper will further reduce the 'knowledge gap' between the scholars of the conventional communication media technology and the new media of the Internet and the mobile phone as a means of advancing literature in computer-mediated communication and by extension the field of communication studies in Nigeria and Africa, where media technology is uniquely appropriated against socio-cultural backgrounds.

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