E-Mail Overload and Instant Messaging: Different Investigative Dimensions

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Abstract— **While there have been extensive investigations on email overload, the main source of this business and management problem has received less attention so far. There are claims that using Instant Messaging (IM) reduces email overload, however, this has not been validated by academic research findings. This paper investigates how email overload is generated, and why IM is claimed to reduce it. Data collection was through the use of a quantitative mono-method, via an anonymous Survey Monkey online questionnaire. Respondents are members of an international professional body – The International Institute of Risk & Safety Management (IIRSM) – and work in different countries, industries and organizations. A cross-sectional Case Study, with an inductive approach is used. Results provide evidence that email overload is not externally-generated and that using IM does help reduce this internally-generated overload. A potential link between email overload, IM use and industry is observed. This study helps develop a more comprehensive understanding of email overload and contributes unique findings focused on establishing the main source of this universal workplace problem. Claims that IM reduces overload come from marketing material and newspaper articles lacking empirical evidence. This research is the first to establish whether or not these claims are true.**

Keywords- E-mail; IM; email; overload; source; reduce

I. INTRODUCTION

Proclaimed a `universal problem` two decades ago (Whittaker and Sidner, 1996 cited in [1]), email overload still remains an issue, in the modern workplace [2] pg. 106. Email is a `central` (Dabbish and Kraut, 2006, cited in [3] pg. 991, `ubiquitous` [4] pg. 69, and `indispensable` business tool (Hair et al. 2007 cited in [5] pg. 157, and is among the most popular current communication mediums [6].

Email`s popularity meant that the sheer volume of information made instantly available [7], and the increasing speed of communication, inundated users with more information than can be handled cognitively (O'Driscoll et al., 2010, cited in [8], resulting in information overload. Email not only plays a central role in, but is considered a primary cause of information overload in the workplace [2]; [5]; [7]; Bawden, Holtham and Courtney, 1999, Dawley and Anthony, 2003 cited in [2].

Irrespective of the continued growth of email use [9], it is not the only digital communication medium that organizations are using, the latest addition of which, is corporate instant messaging – IM [4]. Maina, (2013) points out that a third of IM users use the tool as much as email, if not more, and there are

projections of IM substituting email, in the upcoming future (Cameron and Webster, 2004; Evans and Eber, 2013; Duggan, 2013; [27], cited in [11].

Whether or not this will actually happen remains to be seen, however, a Sunday Times article [12] claimed that one IM business application – Slack – reduced internal email by as much as 90% to 100%. Fact? Or a piece of sponsored content – the news industry`s fastest-growing revenue source [13].

A. Aims and Objectives

This research asks the following questions:

- How is email overload generated, in the workplace?
- Why is Instant Messaging claimed to reduce email overload?

To the best of the author`s knowledge, there are no research findings or academic work looking into these areas, hence, the aims and objectives of this research are:

- To establish: the main source of email overload; whether or not using IM reduces overload
- To understand trends and patterns based on collected data

II. LITERATURE REVIEW

A. Workplace Communication

Good workplace communication is essential [14] and the key characteristic of the current workplace is its collaborative nature, which fully depends on co-workers communicating effectively together [10]. Early studies of workplace communication (Dubin and Spray, 1964; Kelly, 1964; Klauss and Bass, 1982; Lawler, Porter, and Tannenbaum, 1968, cited in [15] report that as much as two-thirds of it is vertical: between subordinates and superiors, and just a third being peer-to-peer horizontal communication.

Wilson (1992) stresses that despite only taking up a third, diagonal communication links are vital to coordinate tasks and for information exchange, needed in complex problem-solving. Wilson`s research was based on military personnel, working in an organization with a tall hierarchy. Revisiting this aspect to establish current proportions, as well as uses of the different communication links in modern organizations, including those with very flat hierarchies, would provide updated findings that are more representative of today`s workplace communication.

The reasons, shown in Figure 1, why high performers and low performers use diagonal communication are different [15],

however, these findings are almost a quarter of a century old and, to the best of the author`s knowledge, there is no research looking into the reasons high and low performing groups use each of the three communication links, not just diagonal, especially when utilizing modern digital communication tools like email, video-conferencing and instant messaging.
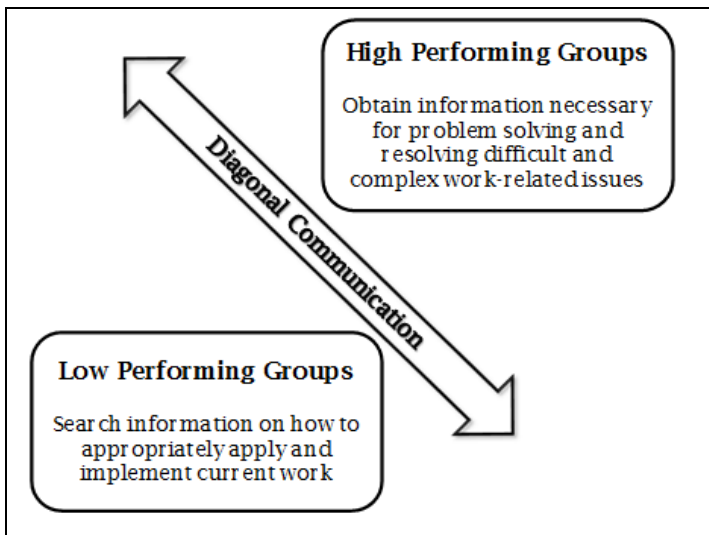

Figure 1.   Different Uses of Diagonal Communication Links   (Information Source: [15] Diagram Source: Author`s Own)

B.   Digital and Computer-Mediated Communication

Electronic communication has brought fundamental changes (Ramsay, Hair, and Renaud, 2008; Whittaker and Sidner, 1996 cited in [3]. It is technology that changed organizational culture, communication speed, working practices – creating a culture of 24/7 communication [5] in which organizations are facing increasing need to stay connected permanently [4]. Technological advances continue to provide new communication channels, making it difficult to choose between them (Quirke, 2008 cited in [16].

Walther`s (1996) research around Information and Communication Technologies (ICT), looking into computer mediated communication (CMC), goes through 3 phases: impersonal, interpersonal to hyperpersonal. CMC can become hyperpersonal by exceeding face-to-face (FtF) communication [17]. The Hyperpersonal Theory of Computer-mediated Communication [17] is a framework on how ICT-mediated communications affect outcomes and experiences of social interaction [18]. Walther and Parks (2002, cited in [19] pg. 476) stress that `the channel itself facilitates goal-enhancing messages by allowing sources far greater control over message construction than is available in FtF settings`.

C.   Email

As a CMC channel, email is `asynchronous` (Thomas et al, 2006, cited in [7]pg. 723), `textual` (Tyler and Tang, 2003 cited in ibid.), `efficient` (Renaud, Ramsay and Hair, 2006 cited in ibid.), `instantaneous` (Mackay, 1988 cited in ibid), `traceable` (Clark 1996; Monk, 2003, cited in ibid.), `an

archival tool` [20]pg. 31) and facilitates communication across space and time (Whittaker and Sidner, 1996 cited in [5]. Email offers a `rich` (Panteli, 2002, cited in [6] pg.407) user-friendly, quick (ibid) and cost-effective (Berghel 1997, Whittaker, Bellotti and Gwizdka, 2006, cited in ibid) way to keep in touch with colleagues, irrespective of how geographically dispersed they are (Renaud, Ramsay, and Hair, 2006, cited in [2].

D.   Email Overload

In perhaps a somewhat classic case of "too much of anything is bad", the over-reliance on email, during the 90`s [5], brought the identification, in 1996, of `email overload` [6] pg. 408). Definitions, found in literature, are as follows:

- occurs when email is overwhelming (Ducheneaut and Bellotti, 2001; Ingham, 2003, cited in [6]; Eppler and Mengis, 2004; Jackson, Dawson, and Wilson, 2001; Venolia, et al, 2001; Whittaker, Bellotti, and Gwizdka, 2007 and 2006 cited in [7]
- when one is `unable to find, cope with or process his/her emails effectively`(Dabbish and Kraut, 2006; Sevinc and D'Ambra, 2010 cited in [21] pg. 502)
- `a multi-dimensional construct`(Dabbish and Kraut, 2006; Schuff et al., 2006 cited in [6] pg. 407)

The consensus in literature, on email overload`s definition, leaves the impression that this phenomenon is entirely subjective – as though the problem only exists if one feels overwhelmed by emails. Thus, when one does not feel overwhelmed, they don`t have overload – irrespective of the quantity, frequency or complexity of the emails themselves. Therefore, it is a paradox that a term that, in essence, actually describes an overload of email, is being used to describe one`s subjective feelings of being overwhelmed by email. As a result, three decades after its identification, the definition of the term email overload remains undefined, in the literature.

E.   Effects of Email Overload

The use of email improves efficiency (Berghel, 1997, cited in [6] and productivity in organizations (Jackson, Dawson and Wilson, 2003, cited in ibid), but it is the email overload that is so damaging to individual productivity (Cranor and LaMacchia, 1998; Wilson, 2002; Pliskin, 1989 cited in [6] and organizational (Berghel, 1997, cited in ibid; Mark et al., 2012; Karr-Wisniewski and Lu, 2010; Sevinc and D'Ambra, 2010, cited in [5].

A direct link between interruptions, emails, email overload and work performance possibly exists, see Figure 2. A study looking specifically at these factors, and their impact on work performance, may generate more meaningful and improved insight.
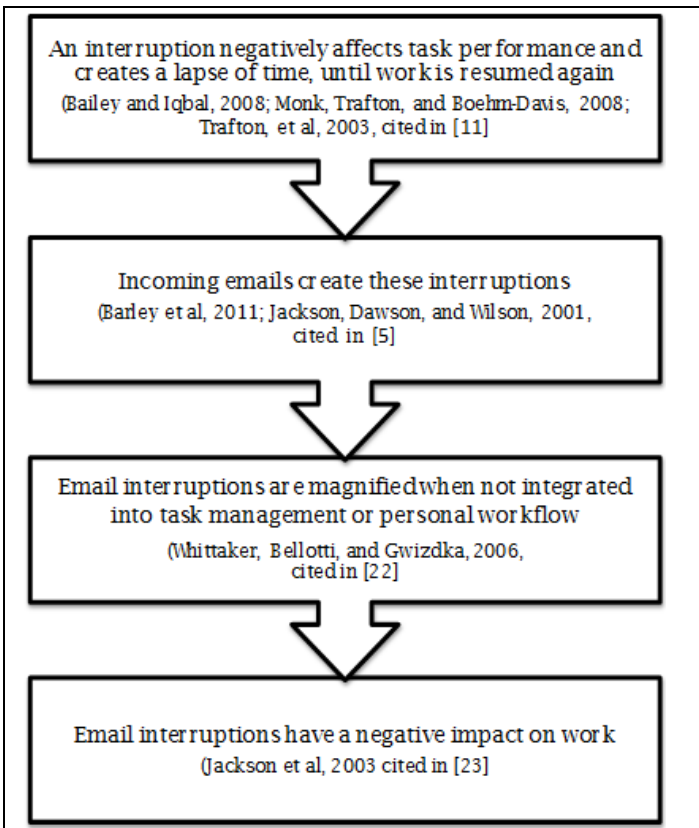
An interruption negatively affects task performance and creates a lapse of time, until work is resumed again (Bailey and Iqbal, 2008; Monk, Trafton, and Boehm-Davis, 2008; Trafton, et al, 2003, cited in [11]

Incoming emails create these interruptions (Barley et al, 2011; Jackson, Dawson, and Wilson, 2001, cited in [5]

Email interruptions are magnified when not integrated into task management or personal workflow (Whittaker, Bellotti, and Gwizdka, 2006, cited in [22]

Email interruptions have a negative impact on work (Jackson et al, 2003 cited in [23]

Figure 2: Effect of Email Interruptions on Work (Diagram: Author`s Own)

Effects of email overload, found in literature, are as follows:

- reduces efficiency of information processing [22]; [20]
- related to `work strain` (Bellotti, et al, 2005; Day, et al 2012; Porter and Kakabadse, 2006 cited in [8] pg. 326)
- has a negative impact on psychological well-being (O`Driscoll, et al, 2010 cited in [8]
- reduces job satisfaction, increases psychosomatic complaints (Moser et al, 2002, cited in [22]
- creates stress and `email-related pressure` (Hair et al, 2007, cited in [5] pg. 157)
- increases `emotional exhaustion` [8] pg. 341)

As previously mentioned, email overload appears to be a purely subjective phenomenon. On these grounds, it becomes possible to propose the notion that the above-listed effects are far from comprehensive, inclusive or complete. In-depth interviews and qualitative studies of only respondents with email overload (as opposed to those without) have the potential to unearth, reveal, discover and expose effects of email overload previously not studied, or even considered.

The consequences of email overload on work-life balance have not been researched by many authors yet, making it challenging to genuinely attribute this, as an effect. Nevertheless, factors pertaining to it are highlighted in Figure 3.
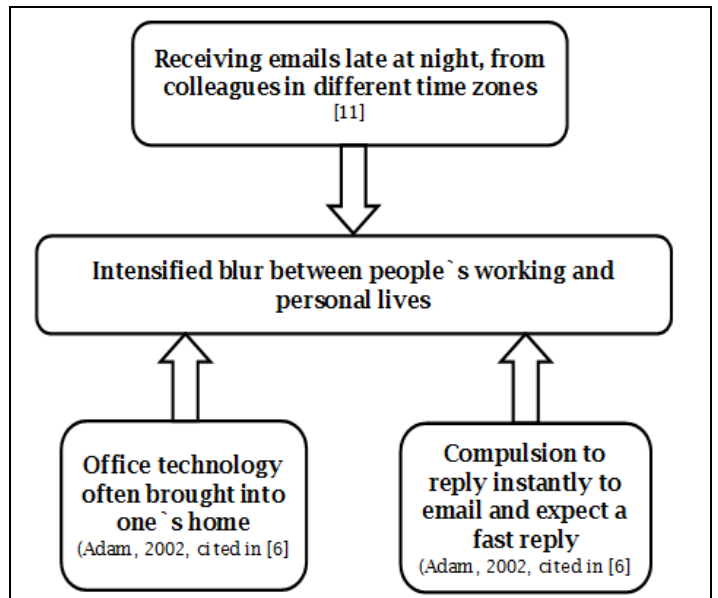

Receiving emails late at night, from colleagues in different time zones [11]

Intensified blur between people`s working and personal lives

Office technology often brought into one`s home (Adam, 2002, cited in [6]

Compulsion to reply instantly to email and expect a fast reply (Adam, 2002, cited in [6]

Figure 3: Email Overload and Work Life Balance (Diagram: Author`s Own)

F. How to Reduce Email Overload

There is no consensus on how successful various email management strategies are, when it comes to stress reduction (Dabbish and Kraut, 2006; Fisher et al., 2007; Tyler and Tang, 2003, cited in [3]. Perhaps the key here would be to focus less on email management techniques that reduce stress, and more on stress reduction techniques, that work most effectively for the individual experiencing email overload and stress. Thereby shifting the focus of stress reduction away from email management and on to individual stress reduction techniques.

The main groups of strategies and coping techniques for email overload, found in literature, are shown in Figure 4 below.
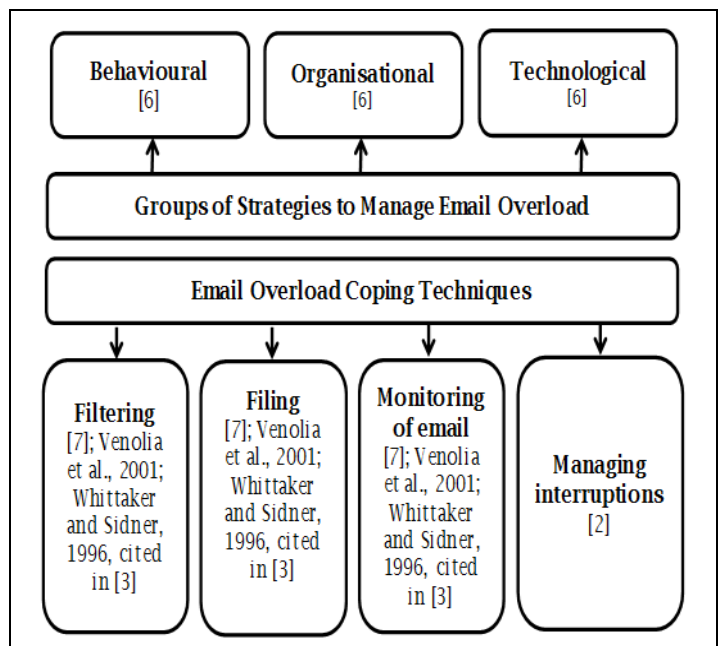

Behavioural [6]

Organisational [6]

Technological [6]

Groups of Strategies to Manage Email Overload

Email Overload Coping Techniques

Filtering [7]; Venolia et al., 2001; Whittaker and Sidner, 1996, cited in [3]

Filing [7]; Venolia et al., 2001; Whittaker and Sidner, 1996, cited in [3]

Monitoring of email [7]; Venolia et al., 2001; Whittaker and Sidner, 1996, cited in [3]

Managing interruptions [2]

Figure 4: Email Overload Strategies and Coping Techniques (Diagram Source: Author`s Own)

From a technological perspective, email overload occurs when email clients and software do not offer sufficient support in handling emails, specifically the organization and retrieval of email [7]. Following the identification of email overload, much of the initial research focused on technological solutions, many of which are now embedded within email software (Dabbish and Kraut, 2006; Schuff et al., 2006; Fisher et al., 2006; Evans and Wright, 2008; cited in [6]. As though the rationale was that because email is technological, technological solutions will fix the problem of email overload. The weakness with this approach is that email overload is much less a technological problem than it is a subjective phenomenon, felt by individuals. Focusing on recent and newly-discovered findings on the effects of overload on individuals may lead to technological innovations and new solutions.

Organizational strategies, proposed in the literature, are summed up below:

Strategic Shift:
• Encourage use of telephone or face-to-face interaction (Evans and Wright, 2008, cited in [6]
• Organization-wide intervention is needed as `strategies aimed at simply reducing email volume and changing individual behaviors may not be enough`[6] pg. 413
• `Quit trying to solve problems by email` [24] pg. 52

Guidelines:
• Issue email guidelines (Ingham 2003, cited in [6]
• Provide `clear parameters for appropriate email usage` [8] pg. 343
• Emails that have multiple parts should be banned [24]

Training:
• Organizations should invest in formal email training for employees (Lim and Teo, 2009, cited in [6]
• `Managers should support email training` [8] pg. 343
• Bring down email defects through training on email best practice [23]
• `Provide new (and possibly existing) employees with training on e-mail file management, e-mail policies and expectations`[5]pg. 171
• Disseminate `common understanding and use of email communication` by training whole workgroups [22] pg. 1465

What concerns organizational strategies, a factor to consider is the importance of internal alignment, and this is where McKinsey`s 7S model is very useful [25]. Training and guidelines are not sufficient to address this problem, at an organizational level. Because they are inter-related, each of the elements must be considered: shared values, strategy, style, structure, skills, staff and systems [25]. Research exploring organizational strategies for email overload, encompassing the 7Ss, is likely to produce a wealth of knowledge to add to the currently-limited findings.

Waller and Ragsdell (2012) stress that, in the long-term, it is critical to change behavior, especially of employees in authority, who not only work all hours themselves, but have the expectation that others do so also. Behavioral strategies, found in literature, are summarized below:

Email Checking and Spending Time:
• Maintain appropriate norms of communication by not using email outside of working hours [8]
• Subject email communication to workflow management and scheduling [22]
• Check emails at times set aside for this activity [9], [6] and determine these intervals [2]
• Respond only to emails that are urgent (Harlow, 2007, cited in [6]
• Checking emails frequently can reduce email overload (Dabbish and Kraut, 2006, cited in [22]
• To improve information processing, use self-management and task management techniques such as setting priorities (Whittaker et al, 2007, cited in [22]

Time-Saving Strategies:
• Create templates for frequently-used information, schedule messages in advance and clean as you go by deleting unnecessary email frequently [9]

Managing Work-Life Balance:
• Create and use separate work and personal email accounts (Capra et al, 2013, cited in [26]

Managing interruptions:
• To reduce interruptions, audio and video alerts need to be turned off [9] and email notifications removed [2] or the email software closed completely until the next checking interval (Jackson, Dawson and Wilson, 2003, cited in [22]

Subject Lines and Email Style:
• Subject Lines must be –
  clear (Jackson, Dawson, and Wilson, 2001, cited in [6]
  hyper-specific [24]
  effective [22]

• Emails must be –
  meaningful and accurate [5]
  brief, with conversation closing quickly [24]
  to the point and concise (Jackson, Burgess and Edwards, 2006, cited in [22]
  composed with care, to develop professional and consistent standard of communication [8]
  email must not be forwarded or copied (bcc or cc) to others unless it is essential [5]

Rules, Filtering and Filing:
• Owens (2013) suggests funneling FYIs, filtering and using rules
• Forsyth and Jenkins (2011, pg. 107) explain that filtering email is to delete unwanted messages and prioritize important ones, while filing is the use of `a

structured folder system to speed up storage and assist with later retrieval`

Current strategies focus predominantly on tasks directly related to email use. Given that overload exists when email is considered overwhelming to a user, a point of view to challenge the current direction of research is to explore the behaviors that are not directly related to actual email utilization, but help cope with the overload. Another approach is to conduct qualitative data analysis of behavioral strategies, used by individuals who do not have email overload. Exploring various techniques and strategies used by such individuals may establish if there are coping methods being implemented that are not covered by existing findings.

G. Concluding Critique on Email Literature

Current literature on email overload has 3 prominent themes and concepts: definitions and characteristics, effects of the overload and ways to reduce it. To the best of the author`s knowledge, research currently offers no insight into whether overload occurs mostly from communication with micro-external stakeholders, or intra-organizational communication. Within an organization, email use and overload has not yet been looked at, in terms of vertical, horizontal and diagonal communication channels. As for external communication, there is no research that has explored communication with which of the external stakeholders contributes the most to email overload. Although it is valuable to define a problem, explain its effects and discover methods to reduce it, so too is the understanding of the source of the problem.

H. Instant Messaging (IM) and what it is

Key features and characteristics of IM are as follows:
- Intrusive and interactive, like the telephone, and a text-based form of communication, like email [27]
- An `information-transmission channel` [4] pg. 83
- Falls into the IT category of groupware [10]
- A combination of written and spoken language (Baron, 2004; Herring, 1999 cited in [28]
- A tool for interactions, quick, ethereal and `secondary to the main task` [4] pg. 81
- Allows `near-synchronous computer-based one-on-one communication` (Nardi et al, 2000 cited in [27]
- Indefinitely open lines allow the initiation of conversation, without the use of opening greetings and closing sign-offs (Isaacs et al, 2002, cited in [28]
- Facilitates multitasking and allows real-time, virtual communication [4]
- Allows for status-line updates [28]
- Allows presence-awareness, supports parallel communication and enables `silent turn-taking in conversations` (Rennecker, Dennis, Hansen, 2006, cited in [4] pg. 70
- Within-medium polychromic communication [27]

The claim that IM is `secondary to the main task` [4] pg. 81 may be challenged, when considering the role IM plays in live communication with potential clients, through organization's websites that provide this facility. Exploring diverse job roles,

in which IM is used, may provide grounds for comparisons between IM use as being a primary and secondary task.

I. IM uses and factors affecting this

Broadly speaking IM is used `to maintain connections and relationships with co-workers, family, and friends` (Li, Chau, and Lou, 2005; SilkRoad Technology, 2012; Lenhart, Rainie and Lewis, 2001 cited in [11] pg. 433). It is not clear why literature has not yet acknowledged the workplace reality that IM is also used to maintain connections and relationships with existing and potential clients, suppliers, and other micro-external stakeholders, and not just internal co-workers, family and friends.

Used widely by virtual teams (Hoang and Radicati, 2011, cited in [28], Pazos, Chung and Micari (2013) found that IM is used more for collaboration tasks – making schedules, clarifying and giving status updates – than conflict tasks, and this is partly due to a degree of informality that IM brings to conversation, making it more difficult to resolve conflict by using this medium. Salvucci and Bogunovich (2010, cited in [11] pg. 434) found that IM-ing is mostly used for `lower workload tasks`. These could be pre or post-task conversations or information-seeking discussion to help complete an existing activity [4].

Darics (2014) highlights that numerous factors affect IM use such as urgency of issue to discuss, hierarchical relations between users, gender, personal variables and the length of time a person has been a member of a team. Other factors include users` familiarity with each other and the medium itself (Isaacs et al, 2002 cited in ibid.) and the organization's communication culture (Pauleen and Yoong 2001; Watson-Manheim and Belanger, 2002, cited in ibid.) IM provides `immediate feedback and reinforcement` [11] pg. 434 and research into IM communication, through the prism of Walther`s (1996) Hyperpersonal Theory of CMC, may provide additional insight into the effects of IM use.

J. Effects of using IM

Although there has been much research (Cameron and Webster, 2005; Junco and Cotton, 2011; Ou, et al, 2010; Shaw, Scheufele and Catalano, 2007; Czerwinski, Cutrell, and Horvitz, 2000; Mansi and Levy 2013, cited in [11] looking into what effect IM has on productivity, there is no consistency in the findings [11]. Effects of using IM are shown below.

Training:
- Supports informal communication (Nardi, Whittaker, and Bradner, 2000, cited in [10]
- Does not have negative effect on performance, because workers are used to IM and its presence at work [11]; Mansi and Levy, 2013, cited in [11]
- Improves workers` concentration and motivation, thereby making them more effective and efficient (Coker, 2011; Oravec, 2002 cited in [11]
- Speeds up decision-making, but interruptions disturb work, reducing productivity (Cameron and Webster, 2004; Evans and Eber, 2013; Duggan, 2013; cited in [11], [27]

- Influences how employees use and perceive time in organizations
(Orlikowski and Yates, 2002 cited in [4]

IM alters not only the way people complete tasks but how they communicate (Cameron and Webster 2005; Turner and Tinsley, 2002 cited in [4] and Figure 5 shows how changing communicative norms may result in frustration (Lam and Mackiewicz, 2007; Reinsch, Turner, and Tinsley, 2008 cited in [28] when using novel mediums like IM.
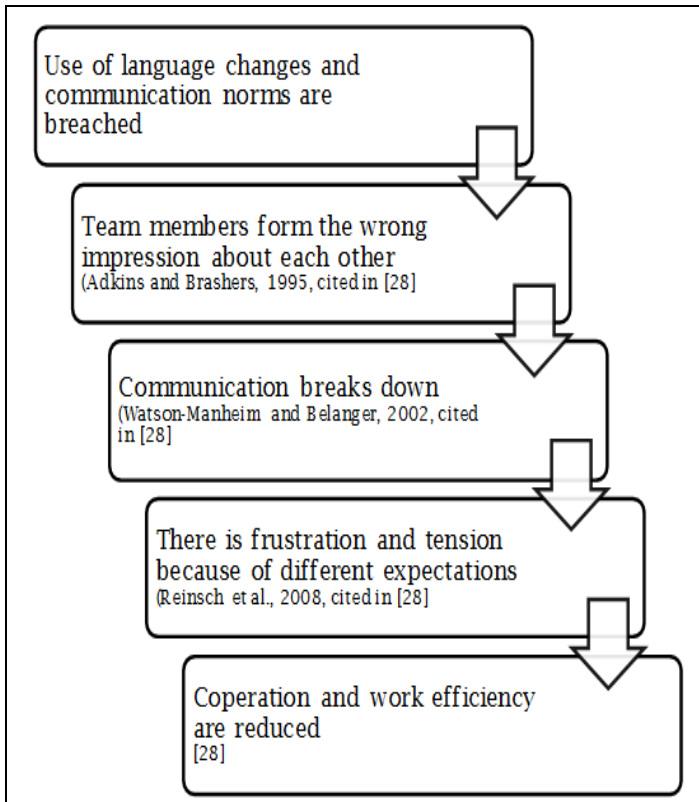

Figure 5: Changing Communication Norms Result in Frustration
(Diagram Source: Author`s Own)

Unlike findings on the need to have policies and guidelines on appropriate email use, in organizations, existing literature offers no insight on the need for or benefits of organizational policies on IM use. Perhaps if organizations establish IM communicative norms and convey them to employees, then frustration may be brought down.

K. Concluding Critique on IM literature

Literature on IM focuses on the following key concepts: definitions and characteristics, its growing popularity, how it is used, and the effect IM usage has. IM appears to be meeting the modern workplace`s need for collaboration and speed of information exchange, but will it be long before growing and excessive IM use generates a new phenomenon – IM overload – as was the case with email? To the best of the author`s knowledge, literature has not yet explored how IM contributes to information overload. Be that in the form of adding to the information overload, or reducing it, especially the email overload.

III. METHODOLOGY

A. Philosophical Stance

Realism is to `deny that we can have any "objective" or certain knowledge of the world, and accept the possibility of alternative valid accounts of any phenomenon` [29] pg. 5. Rapid technological advances mean that workplace dynamics, opportunities and challenges are continuously changing. E-mail overload, especially Instant Messaging, are quite new phenomenon (Lu et al., 2009; Pierce, 2009; Cameron and Webster, 2005, cited in [30] and current theory could be revised to make it more comprehensive and up-to-date with recent developments. For this reason, realism is the chosen philosophical stance and paradigm, underpinning the research.

B. Approach

To the best of the author`s knowledge, there is currently no theory, in literature, about the main sources of email overload, or whether using IM reduces this overload. On these grounds, an inductive research approach was selected, as being the most applicable. This requires first the collection of data, analyzing and finding patterns in this data, and then developing theories that could provide explanations for observed trends and patterns [31].

C. Strategy

The research strategy used is case study: single case. In this case study, participants are members of The International Institute of Risk & Safety Management (IIRSM). The author has no access to, or knowledge of information pertaining to the individuals, including respondents` names, age or any personal information. Email overload, as well as IM use, is a contemporary, wide-spread phenomenon and respondents are members of an international professional body. Data from professionals working in different countries, organizations and industries would facilitate the identification of trends. This, in turn, will help the data analysis process and enable some theories to be put forward. It is the author`s belief that findings and theories of this research will, indeed, `provide insight into a causal relationship across a larger population of cases` [32] pg. 86. A limitation of this research is that it is based on a singular case study, and analysis is of data from one professional body.

D. Time Horizon

Due to the amount of time made available, to conduct this research, the time horizon chosen is cross-sectional – a short-term study where data is collected `to make inferences about a population of interest (universe) at one point in time` (Hall, cited in [33].

E. Choices

A quantitative mono-method is selected for the following reasons: nature of the research, available timeframe for this research project, available word count for the final report.

F. Data Collection and Analysis

The data collection method used is an Online Questionnaire on Survey Monkey. Data analysis is done using Microsoft Excel. There are a total of 213 respondents, 4 of which have not given their informed consent and did not take part. 15 respondents did not complete the questionnaire, leaving a total of 194 respondents. The choice of sampling selection is non-probability sampling – in line with the inductive approach used. The group is Volunteer and the technique is Self-selection [34]. Respondents were provided with information pertaining to the research and informed consent was asked, prior to taking part, thereby allowing each individual `to identify their desire to take part in the research` [34] pg. 289.

IV. RESULTS AND DISCUSSION

A. General Results

Demographic information, about respondents, is shown in Table 1.

Table 1: Respondents` demographics

Variable	Percentage
Gender	
Male	86%
Female	14%
Age	
25-34	12%
35-44	18%
45-54	30%
55-64	34%
Over 65	6%

When asked about the size of the organization they worked in, in terms of the number of staff employed, 44% of respondents, that is 86 individuals, are from SMEs – companies that employ less than 250 people (Table 2).

Table 2: Size of the organization, where respondents work

Organization Size (Staff Qty)	Number of Respondents
1-250 (SME)	86
251-1,000	26
1,001-5,000	35
5,001-10,000	12
10,001-15,000	10
15,001-20,000	1
Over 20,000	24

When asked about what industry they work in (Table 3), the majority - 54 respondents, work in services, followed by construction.

Table 3: Industry where respondents work

Industry	Number of Respondents
Services	54
Construction	49
Public Sector	32
Manufacturing	27
Energy & Utilities	24
Communications	5
Agro-Industries	3

From these demographic data results it can be seen that respondents are safety, health and risk management professionals of different age and genders, working in diverse industries and organizations of various sizes. Based on this, it can be said that findings of this research may be generalized, in terms of gender, age industry, and company size.

B. Source of Email Overlaod

It was important to first establish the existence of email overload, among respondents. Table 4 shows that although slightly less than half of the participants have this workplace problem, a much larger percentage of female than male respondents are affected. This difference is larger than the `negligible` difference found in other research [35] pg. 15.

Table 4: Respondents` email overload data

Variable	Percentage
Have Email Overload?	
Yes	48%
No	52%
Overload By Gender	
Male	45%
Female	68%

To address the first research question, respondents who have email overload were asked where most of it came from and more than half of them reported internally-generated overload (Table 5). These findings may allow to put forward the notion that email overload is a workplace problem generated, for the most part, by the organization itself.

Table 5: Source of email overload

Emails from Where Contribute Most to your Overload?	Percentage
Inside the Organization	57%
Outside the Organization	43%

Respondents, whose email overload comes from inside the organization, were asked to rank 3 communication channels,

contributing from most to least to their overload. Diagonal communication contributes the most, while vertical communication contributes the least to internal email overload among respondents (Table 6). This is a paradox, when remembering that 65% of workplace communication is vertical and may indicate that, perhaps due to the profession of the respondents, the nature of most of their email communication is diagonal, between colleagues in different departments of the organization. It would be interesting to compare this with respondents of other professions.

Table 6: Ranking of internal communication channels

	1. Most	2. Medium	3. Least	Total
Vertical	17	11	26	54
Horizontal	17	28	9	54
Diagonal	20	15	19	54
Total	54	54	54	

Respondents, whose overload comes from outside the organization, were asked to rank 4 micro-external stakeholders, contributing from most to least to their overload. Other micro-external stakeholders contribute most, to respondent`s external overload, this is followed closely by clients; creditors are the least-contributing external stakeholder (Table 7) here again, these findings may be because of the nature of respondents` profession. For example, respondents in Finance and Accounting profession may report Creditors as contributing most to their external overload. Thus it may be said that both the internal and external communication channels, contributing most to email overload may vary, depending on respondents` profession.

Table 7: Ranking of external communication channels

	1. Most	2. Medium	3. Medium	4. Least	Total
Clients	15	12	6	7	40
Suppliers	6	15	19	0	40
Creditors	2	4	9	25	40
Other	17	9	6	8	40
Total	40	40	40	40	

To better understand what factors contribute to respondents not having email overload, various reasons were provided for them to choose from. Results (Table 8) show that self-training is the reason chosen the most, by an overwhelming majority of respondents.

Table 8: Reasons respondents do not have email overload

Why do you NOT have Email Overload? *multiple responses allowed	Percentage
I self-trained to be more efficient with my emails	50.35%
My organization encourages using alternatives to email, such as face-to-face or telephone	10.64%
None of the above explains why I do not have email overload	9.93%
I receive only a few emails a week	9.22%
My organization encourages using technological alternatives to email, such as IM.	7.80%

I and others in my organization use this alternative	
My organization has email policies and guidelines that reduce/d email overload across the organization	6.38%
I received email training from my organization, which made me more efficient with my emails	5.67%

Interestingly, these findings show that organizational policies and guidelines, regarding both the use of email and the use of alternatives to email (telephone, IM), might not be as effective as organizations consider they are, in reducing email overload. Either that or the organizations these respondents work in simply do not have such guidelines and policies. Furthermore, despite research [22] finding that training helps reduce information overload, email training provided by their organization is respondents` least-chosen reason. These findings are alarming, considering that more than half of email overload comes from inside the organization itself (see Table 5), indicating that perhaps organizations generate overload, while not doing enough to reduce it.

C. Impact of IM use on Email Overload

To answer the second research question, responses of those who use IM and have email overload were put into separate groups (Figure 6):

- whose email overload comes from inside the organization (grey color)
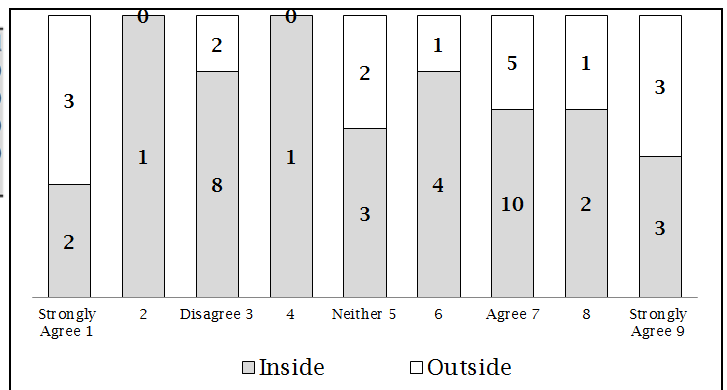- whose overload comes from outside the organization (white color)

Figure 6: Comparison of Agreement on IM Reducing Overload

Findings in Figure 6 show that there are 66,67% more IM users whose email overload comes from inside the organization, than those IM users, whose email overload comes from outside the organization. Among IM users whose email overload comes from inside the organization, 19 respondents (55.88%) agreed, in varying degrees (6 to 9) that IM reduces email overload. There were only 12 respondents (35.29%), who disagreed with the statement, while 3 respondents neither agreed nor disagreed. Hence, amongst the IM users, there are more respondents whose email overload comes from inside than from outside the organization, and out of these respondents, more than half agreed with the statement, in varying degrees, that IM does reduce email overload. The

conclusion that may be made is that respondents agree, in varying degrees, that IM use reduces internal email overload.

Looking into the top 3 reasons why IM is used (Table 9), findings indicate:

- a need for speed in information exchange
- a need for the convenience, that IM provides
- need for users` information to be read faster by the receiver of the IM

It may be interesting to compare these findings with reasons for using IM by respondents of different professions.

Table 9: Reasons respondents use IM

Why do you use IM? *multiple responses allowed	Number of Respondents
quick	77
convenient	65
will be read faster than if I sent an email to the same person	51
effective	42
reduces my email overload	35
no need to use greetings and sign-off	34
reduces email overload of people I communicate with	33
ideal for collaboration	26
more appealing than email	20
non-intrusive	19
other reasons not mentioned here	11

D. Unexpected Observation

In line with the objective of understanding trends and patterns in the data, an unexpected observation was made, during data analysis. Results of email overload and IM use, by industry, are in Table 10, which shows that the industry with the lowest percentage of respondents who use IM, as well as those who have email overload is Agro-Industries. The 2 industries with the 2 highest percentages of respondents with email overload, as well as those who use IM, is Communications and Energy & Utilities. These findings might be an indication of a potential link between email overload and industry, as well as IM use and industry.

Table 10: Email overload and IM use by industry

Industry	Email Overload % of respondents	IM Use % of respondents
Communications	100%	80%
Energy & Utilities	63%	58%
Public Sector	50%	25%
Services	46%	46%
Construction	45%	47%
Manufacturing	37%	41%
Agro-Industries	33%	0%

V. CONCLUSION

This research looked at the phenomenon and workplace problem of email overload, and how using IM affects it. This is the first study, to the author`s knowledge, that looked into the source of email overload. Respondents are members of a global institute, and findings are based on data from a cross-section of professionals in different countries, industries and organizations – making it possible to generalize the results.

Findings show that 57% of all overload is internally-generated, within the organization. Diagonal communication contributes most, to the problem, whereas vertical communication is the least-contributing. The implication of the findings is that email overload is a workplace problem generated inside the organization itself, through specific communication channels. A limitation that may restrict the generalizability of these results is that respondents are from a Risk and Safety Management professional body, which may have influenced findings on the sources of externally-generated overload. The main source, seen as contributing most, was `Other`, followed by Clients. Creditors are the least-contributing macro-external stakeholder. The main reason why respondents did not have email overload is because they self-trained to cope with the problem. Additional research that includes qualitative data, and is with a different group of respondents, would provide more results to either support or contradict these findings on the sources of email overload, as well as more clearly establish who the `Other` contributing external stakeholders are.

This research provides no information on why organizational policies and guidelines on the use of email, as well as alternatives to email, scored so low among reasons why respondents do not have overload. Possible explanations for these findings are that organizations simply do not have such guidelines and policies in place or, if these exist, they do not adequately address the problem of email overload. Further studies could more clearly establish the reasons.

The rising use of IM has led to further development, tailoring and integration of such communication tools, at the workplace. Despite a fairly even split in agreement, disagreement and neutral perception that IM reduces email overload among all respondents, when looking at IM users who actually had email overload, opinion is quite definitive: among IM users there are more respondents whose overload is internally-generated. Of these, 56% agreed that using IM reduces email overload, 35% disagreed and 9% held neutral views. There are more respondents with email overload (than without) who use IM because of reasons not identified here. Another observation is of a potential link between email overload, IM use and industry. Results show that both email overload and IM use is consistently higher or lower in various industries.

More research is needed to support or contradict findings on IM use reducing internally-generated email overload.

Qualitative research into why IM is used, especially by respondents with email overload, could help identify new reasons, not currently identified in literature. Larger studies, involving professionals from all industries, are required to establish if a link between industry, email overload and IM use – as observed in this research – truly exists.

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