

Enochs of the modern workplace

The behaviours by which end users intentionally resist information system implementations

Campbell, Robert H.; Grimshaw, Mark

Published in:
Journal of Systems and Information Technology

DOI (link to publication from Publisher):
[10.1108/JSIT-07-2014-0049](https://doi.org/10.1108/JSIT-07-2014-0049)

Publication date:
2015

Document Version
Accepted author manuscript, peer reviewed version

[Link to publication from Aalborg University](#)

Citation for published version (APA):
Campbell, R. H., & Grimshaw, M. (2015). Enochs of the modern workplace: The behaviours by which end users intentionally resist information system implementations. *Journal of Systems and Information Technology*, 17(1), 35-53. <https://doi.org/10.1108/JSIT-07-2014-0049>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal -

Take down policy

If you believe that this document breaches copyright please contact us at vbn@aub.aau.dk providing details, and we will remove access to the work immediately and investigate your claim.

Enochs of the modern workplace: The behaviours by which end users intentionally resist information system implementations

Robert H. Campbell & Mark Grimshaw

Overview

Most Information System (IS) implementation projects are delayed, cancelled before completion, go over budget or deliver an under-utilised system (for example Johnson, 1995; Goldfinch, 2007; Standish Group, 2009). High profile failures are routinely reported in the popular press (for example, Wright 2011; Matier and Ross 2012). A common cause of such outcomes is user resistance (for example Lyytinen and Hirschheim 1987; Hirschheim and Newman 1998; Cooke and Peterson 1998; Beaudry and Pinsonneault 2005; Kim and Pan 2006) and, although IS research generally views this as neither a good nor a bad thing (for example Hirschheim and Newman 1998; Lapointe and Rivard 2005; Ferneley and Sobreperéz 2006; Laumer and Eckhardt 2012), it is an established area of research and something for which a better understanding is sought.

People hold a complex range of attitudes (for example, Rosenberg et al., 1969) that affect judgements and behaviours (for example Krosnick and Petty, 1995; Petty, Haugtvedt and Smith, 1995) and negative user attitudes related to an IS implementation can cause resistance (for example Angst and Agarwal, 2004; Zhang and Sun, 2009; Kim et al., 2009; Donat et al., 2009; Alsajjan and Dennis, 2010, Lee 2011). The focus of this paper is not the reasons why implementations are resisted but how. It is the behaviour of those users who, holding negative attitudes, seek to obstruct IS implementations.

This research was policy driven and intends to have immediate application informing the practice of those who participate in IS implementations. Empirical interviews were conducted with 15 senior IS implementation practitioners who recalled 29 projects across 21 organisations that, with differing degrees of success, had been obstructed by user behaviour. These behaviours are here captured, thematically arranged and presented as a taxonomy using an historic analogy in which each taxon is referred to as a type of modern day Enoch. Table 1 summarises each Enoch in one or two sentences providing an easy to reference and memorable overview. It is hoped that this will enable practitioners to better understand user behaviours and to reflect on their own projects with an improved appreciation of the role that user attitudes and behaviours play in IS implementations.

To begin, this paper introduces the historical analogy through which the results are later presented. An overview is then provided of existing literature that debates the effect of attitude on user acceptance and resistance during IS implementations. The next section describes the inductive research method used in this research. The approaches by which users commonly obstruct IS implementations are then presented as a taxonomy, discussed and their effectiveness considered. As is the norm in IS research, this paper makes no attempt to categorise user resistance as a good or a bad thing.

The Enoch and Luddite Analogy

Without prompting, three interview subjects referred to the Luddites by way of analogy. They had experienced what they viewed as Neo-Luddite behaviour. It is this image of Neo-Luddism that inspired the analogy used here. Viewed by some as heroes and by others as

villains, the Luddites were a large but secret society that opposed mechanisation during the industrial revolution. They took their name from the fictional Ned Ludd (or King Ludd) who in a story had smashed up two knitting frames with a hammer in a fit of passion. The Luddites saw mechanisation as a threat to their livelihood and way of life and like their fictional role model were vigorous in their opposition to technology. For five years from 1811 to 1816 the Luddites threatened and physically attacked those considered responsible for mechanisation such as employers, vendors and magistrates. They rioted, fought with government soldiers and broke into factories to physically destroy hundreds of mechanised looms using a sledgehammer, known as an Enoch or Enoch's hammer – Enoch Taylor being a well-known blacksmith who manufactured sledgehammers. In response, the British government sent twelve thousand troops into Luddite areas, generous rewards were offered for information and in 1812 legislation was passed that made machine breaking a capital crime. Despite such swift and draconian government measures, Luddite action continued for several years and although Luddite activity often involved hundreds of men, relatively few were arrested and fewer still were executed. For an interesting and reasonably authoritative text on the Luddites, the reader is referred to Bailey (1998).

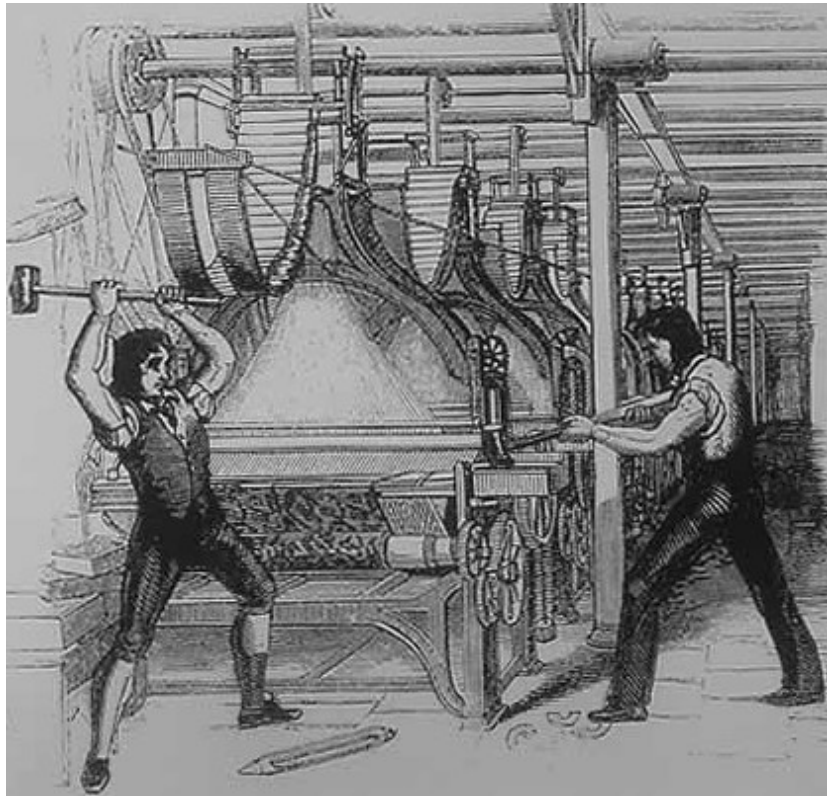


Figure 1: Luddites smashing a loom in 1812 (illustrator unknown)

The Luddites and their Enochs have of course gone but potentially passionate group resistance to technological development is still common and in the modern workplace, the vandal-like and violent techniques of the Luddite have been replaced by a series of more subtle and lawful techniques.

Literature on the impact of attitude on user behaviour during IS implementations

Although the impact of many different factors on user acceptance/resistance of IS implementations has been investigated, covering topics as diverse as age (Morris and Venkatesh, 2000) and self-efficacy (Compeau and Higgins, 1995) (see for example, Webster and Martocchio, 1992; Harrison and Rainer, 1992; Agarwal and Prasad, 1998; Venkatesh and Morris, 2000; Chakraborty et al., 2008), work on the role that user attitudes play has been surprisingly limited. In 2009, two papers (Zhang and Sun; Kim et al.) argued that this

omission was largely due to a perception that user attitudes are not important (for example, Usoro, 2000). Observing this phenomenon, Kim et al. (2009) point to researchers such as Venkatesh and his colleagues (Venkatesh and Davis, 1996; Venkatesh and Davis, 2000; Venkatesh et al., 2003) who dropped the construct of attitude from evolutions of the Technology Acceptance Model (TAM) (Davis, 1989; Davis et al., 1989) arguing that its role was minimal to insignificant with respect to behavioural intention. Despite being a central tenet of TAM, attitude is omitted altogether from later models such as the 'Unified Theory of Acceptance and Use of Technology' (UTAUT) (Venkatesh et al., 2003). Literature reviews on the importance of user attitude expose erratic and inconclusive results (Zhang and Sun, 2009; Kim et al., 2009). Zhang and Sun (2009) and Kim et al. (2009) argue that the cause of this confusion was an inadequate view of attitude structures. Presenting more complex attitude structure models, these papers demonstrate attitude to be a highly significant, if not a crucial component (Zhang and Sun, 2009; Kim et al., 2009).

Kim et al. (2009) present social psychology research that strongly supports the impact of attitude on behaviour, information processing and social judgement (Krosnick and Petty, 1995; Petty, Haugtvedt and Smith, 1995) implying that behaviour related to technology adoption cannot rationally be exempted. They observe that: "Despite the importance of attitude in predicting an individual's behaviour, research on IT adoption has discounted the role of attitude in explaining technology acceptance behavior" (p67). This is a clear contrast; social psychology literature supports the impact of attitude on all behaviour but technology acceptance researchers tend to dismiss it. Explaining the results of those who found attitude to be insignificant, Kim et al. demonstrate that existing research up to 2009 had ignored attitude strength. Subjects with no previous experience of a technology ordinarily approach it

with an open mind. Although user attitudes are technically present, they are weak to the point of insignificance. However, if stronger attitudes are present, generally due to prior experience with the technology, attitudes significantly impact behaviour. This proposition is supported by an earlier paper (Zanna and Rempel, 1998) that did not directly mention attitude. Zanna and Rempel propose that user perceptions form using three inputs, past behaviours, affective information and cognitive information. If users are experienced, past behaviour is the most dominant. This link between experience and the importance of attitude is supported by a later paper (Lee 2011) which found that, within a project, the role of user attitudes increases as a project commences and users gain experience.

Zhang and Sun (2009) differentiate between ‘attitude towards an object’, ‘attitude towards behaviour’ and ‘behavioural intention’ over time, a well established dissection of attitude loosely based on the work of Fishbein and Ajzen (1975; Ajzen and Fishbein, 2005). When attitude is viewed in these terms, its role in an IS implementation becomes clear (Zhang and Sun, 2009). Although significant, Zhang and Sun’s research is of a relatively introductory nature; their notable contribution being the introduction of Ajzen and Fishbein to the debate. Discussions of attitude structures are readily available in psychology (for example, Ajzen, 1989); even with a passing interest, looking up a Wikipedia (2012) definition of attitude immediately uncovers a proposed composition based on ABC (affect, behaviour and cognition). Likewise Kim et al. merely incorporate attitude strength. With hindsight, these contributions were both relatively simple but are significant as they dismantle existing perceptions. Although psychology reveals much about attitude structure, user resistance and acceptance literature has virtually ignored it and, as a result, failed to observe the important role that user attitudes play.

Donat et al. identified attitude as the 'third order of the digital divide'. Examining Australian ICT adoption they observed that: "Attitudes can serve as an important dimension when explaining the adoption and diffusion of new technologies" (p37). In their research, causes of ICT adoption and none adoption are identified and viewed from an attitude change perspective. The 'digital divide' referred to is the gap (division) between those with and those without effective access to technology. The first order of the digital divide is understood to be physical access to technology, the second being the ability to use it (Donat et al., 2009) and, as already mentioned, attitude is the third (Donat et al., 2009). Many people capable of acquiring a technology and learning how to use it do not because of their negative attitudes. Not being directly related to IS implementations in an organisational setting, the work of Donat et al. is not strictly relevant but it does demonstrate the fundamental point that negative attitudes are a potentially significant obstacle. Interestingly, Donat et al. likewise did not have a simplistic view of attitude assuming it to have behavioural, emotional and cognitive dimensions (Rosenberg et al., 1969). In 2010, while developing a TAM descendent for internet banking, Alsajjan and Dennis (2010) found that behavioural intentions were intrinsically linked with user attitudes.

Debates about the factors that decide the relevance of user attitudes and how the results of previous research can be explained continue (for example, Kroenung and Bernius, 2012). However, no current significant research considers user attitudes to be irrelevant. There is strong, if not overwhelming evidence to suggest that user behaviour with respect to acceptance or resistance of an IS implementation is affected by attitudes (Angst and Agarwal, 2004; Zhang and Sun, 2009; Kim et al., 2009; Donat et al., 2009; Alsajjan and Dennis, 2010,

Lee 2011). In this paper, the debate on the role of attitude in IS implementations is taken a stage further. Firstly it is demonstrated that negative attitudes among a potential user base can have a critical impact ultimately stopping a system from going into production. Secondly, the user behaviours that can occur as a direct result of these negative attitudes are identified and modelled into a taxonomy.

This research also contributes to the canon of literature on technology acceptance and user resistance. An established area of research. In the 25 years since the Technology Acceptance Model (TAM) (Davis 1989) was first unveiled, many evolutions of it have been developed (for example, Malhotra and Galletta 1999; Venkatesh and Davis 2000; Moon and Kim 2001; Venkatesh et al. 2003; Saadé and Bahli 2005; Schepers and Wetzels 2007; Boakye et al. 2012), troubled projects have been investigated to understand better the factors that contribute to success or failure (for example, Hirschheim and Newman 1988; Fitzgerald and Russo 2005) and a range of theories and perspectives have been employed to help understand user reactions better (e.g Hee-Woong and Kankanhalli 2009; Jones et al. 2005; Allen et al. 2013; Selander and Henfridsson 2012). The tendency in this domain however has been to focus on the circumstances that cause resistance and, in some cases, the impact of that resistance. Whereas the specific focus of this research is user resistance behaviours.

An inductive method based on expert interviews

This paper presents the first theme to emerge from a larger inductive investigation into attitudes, attitude change and their effects on IS implementations in which user behaviours were examined through a lens of selected attitude change theories emanating from social and cognitive psychology, namely: the Elaboration Likelihood Model (Petty and Cacioppo,

1986); Cognitive Dissonance Theory (Festinger, 1957); and an amalgamation of those that have evolved from Social Identity theory (for example, Chaiken and Eagly, 1976; Tajfel and Turner, 1979; Turner, 1982; Mackie et al., 1992; Reicher and Hopkin, 1996; Hogg, 1996; Kameda et al., 1997). The Elaboration Likelihood Model and Cognitive Dissonance Theory already have a significant presence in IS implementation literature (for example Zhang and Sun 2009; Kim et al. 2009; Mak et al. 1997; Bhattacharjee and Sanford 2006; Hee-Woong et al. 2007; Shumarova and Swatman, 2007; van Birgelen et al. 2008; Broeckelmann and Groeppel-Klein 2008; Behrend 2009; Liao et al. 2009; Bajaj and Nidumolu 1989). What made this investigation unique was its inductive nature and epistemology. Existing studies had been deductive and tended to be case-study based. Reviewing literature it became apparent that existing work had unveiled a knowledge lacunae of considerable breadth meriting an inductive study that, not being focused on a particular concern, workplace or project, would simply investigate the whole area with a view to discovering ‘whatever was encountered’. This paper presents the first outputs to emerge from this investigation.

Defining IS implementation expertise and selecting interview candidates

Our method was based on an epistemic assumption that significant understanding and good practice is found in the knowledge (tacit and explicit), practice and oral traditions of IS implementation experts; an assumption reflected in the remuneration packages such people demand. Commercial and industrial sectors clearly respect systems integration experience and the expertise of those with a history of successful delivery. The word expert however, should be used with caution as there is no agreed definition of ‘an expert’ or of ‘expertise’ that spans all subject matters (Hoffman et al., 1995; Gobet and Campitelli, 2007; Germain and Ruiz, 2009). The only real cross-domain consensus is that expertise constitutes a blend of

domain specific knowledge, skills and experience (Germain and Ruiz, 2009). Qualifying criteria are topic dependent (e.g. Germain, 2006) and establishing a robust definition of an expert for any given subject could prove to be a significant research venture in its own right (e.g. Germain, 2006; Gobet and Campitelli, 2007). With respect to IS implementation experts, no definition exists. Hoffman et al. (1995) surveyed definitions of 'experts' proposing a return to craft guilds' terminology for expert professionals. It is a significant observation that, failing to find clear definitions of 'experts' in modern literature, they opted to revive a mediaeval taxonomy. Accordingly, Hoffman et al. present a taxonomy with seven respective categories: naivette; novice; initiate; apprentice; journeyman; expert; and master. At one end of this comprehensive spectrum is the naivette "who is totally ignorant of a domain" (p. 132) with masters being those who are the expert in a sub domain, "whose judgements set the regulations, standards or ideals" (p. 132). However, most relevant is their definition of an expert: "The distinguished or brilliant journeyman, highly regarded by peers, whose judgements are uncommonly accurate and reliable, whose performance shows consummate skill and economy of effort, and who can deal effectively with rare or "tough" cases. Also expert is one who has special skills or knowledge derived from extensive experience with subdomains" (p, 132) Avoiding an extended etymological debate, it would be hard to argue that any definition of an expert is not to some extent arbitrary, particularly one that attempts to cover 'all professionals', however this did provide a useful basis from which a candidate selection criterion was defined. IS implementation experts: are highly regarded by their peer group and are referred to using distinguishing terminology such as 'leader', 'expert', 'best' or 'strongest'; have practitioner experience in excess of eight years; have played a lead role in the introduction and implementation of at least three major systems and have participated in many more; have a proven track record of dealing effectively with

exceptional ('tough') user acceptance issues; have expertise that has been recognised by a professional organisation in that they have been promoted to, or appointed to, a position which differentiates them from 'journeymen'. The numeric values contained in these guidelines (years experience and number of implementations) were based on the corporate recruitment experience of one of the researchers. Interview candidates who met this definition of an 'IS implementation expert' were then selected from a range of organisations over multiple sectors.

Estimating the correct number of purposively sampled subjects is also known to be problematic (e.g. Guest et al., 2006; Onwuegbuzie and Leech, 2007), general guidance is that data gathering should continue until the point of saturation (Onwuegbuzie and Leech, 2007). Guest et al. (2006) reviewed the commonly used term "theoretical saturation" in academic literature, finding that although it was routinely proposed as a milestone for selecting a sample size, the same literature "did a poor job of operationalizing the concept of saturation, providing no description of how saturation might be determined and no practical guidelines for estimating sample sizes for purposively sampled interviews" (p.60). They go on to review work where the 'number of interviews' is suggested, exposing an erratic set of figures. Although Guest et al. observe that many papers suggest small numbers to be adequate (perhaps only five or six participants), ultimately it has to be concluded that no-one can say how many interviews are enough. In this research, the interviews were relatively long (typically an hour and a half) and being conducted by an experienced practitioner, they were intensive and productive. Accordingly, it was predicted at the outset that saturation might be reached quickly. Although no initial figure was predicted, 23 potential subjects were originally identified of which 15 were interviewed, at which point it was apparent that no

significant new data was forthcoming. Subjects were primarily found through the personal network established by the primary researcher during his 20-year career. Those previously unknown to him were recommended by those who were A brief profile of the 15 subjects is provided in table 1.

.

Subject	Years of relevant experience	Brief profile
1	10	Project manager in a large, highly regulated energy generation company. A specialist in health and safety systems.
2	15	Senior member of a consultancy group focused on IS in manufacturing.
3	34	Program manager who has held senior positions with well-known IT vendors, government organizations and in a private consultancy. UK representative on multiple international committees
4	10	Lead systems analyst and team leader in a large logistics company.
5	10	Customer-facing project manager for an international hi-tech solutions company.
6	41	Program manager who held senior IT management positions in three blue chip companies and a government body; chair of several national user groups; UK representative on multiple international committees; served as an expert witness in over 300 IT related cases.
7	33	Main board director for a well known, international USD(\$) multi-billion manufacturing group.
8	8	Senior manager. Head of accountancy systems in a blue chip financial services group
9	15	Consultant project manager. Formerly Head of IT for a regional newspaper and in a Further Education college
10	14	Head of Information Systems in a British University
11	14	Consultant program manager. Lead program in 4 blue chip financial services groups, a government department and a national catering group. Formerly a technical team leader.
12	30	Team leader and project manager in a blue chip financial services group.
13	26	Analyst programmer and technical lead who moves jobs every 18-24 months. His former employers include high street banks, major IT vendors, large industrial groups, 'dot com' start ups and the public sector
14	28	Senior manager. Several positions held in a major telecommunications company.
15	14	Systems Analyst / Business analyst for a petroleum company, a large retail company and in a financial services group

Table 1: Interviewee profiles

The approach taken to elicit and analyse expert knowledge

Eliciting expert knowledge, although difficult (Kidd, 1987), is a proven empirical technique exploited in a wide range of applications and disciplines (Hoffman et al., 1995). With respect to the role of user attitude and behaviour in IS implementations however, this research represents the first study of its kind. Modelling the epistemology on the famous ‘four stages of competence model’ (often attributed to Maslow) and Kolb’s (1984) experimental learning theory, it could be said that experts have significant *unconscious* and *conscious competence* that causes them to recognise, understand and manage phenomena that are related to user attitude and behaviours. *Concrete experience* (Kolb, 1984) that, although present, subjects may or may not have reflected on or *abstractly conceptualised* (Kolb, 1984). During the interviews, we attempted to facilitate this through learning and to capture the discussions that ensued. Each subject was interviewed individually. Interlocutions on average lasted 89 minutes during which time subjects were taught the fundamental principles that underpin various attitude change theories to a level that facilitated *reflective observation* (Kolb, 1984) and *abstract conceptualization* (Kolb, 1984) enabling their experiences of occasions where attitude and attitude change had affected user behaviours during an IS implementation to be verbalised, recorded and discussed. To achieve this learning, the interviewer, who is both an experienced practitioner and educator, used a series of graphics, explanations and examples. Through discussion, each subject's understanding of the relevant theory was brought to a level where *reflective observation* (Kolb, 1984) and *abstract conceptualization* (Kolb, 1984) could be achieved. Their understanding of the theory was neither deep and durable nor precise, but was adequate. Interlocutions were recorded and transcribed. Data then underwent a thematic analysis, producing a series of major themes, each of which was divided into a series of sub-themes. This paper presents one such major theme and each Enoch represents a

sub-theme. Although generally not considered an essential part of thematic analysis, the results presented in this paper have been reviewed and verified by five of the original subjects.

In total, the 15 subjects spoke for 22 hours and 20 minutes producing 137,495 words of discourse. On average, each subject had worked full time for four different organisations, representing 60 in total. In many cases, their employers had been consultancies executing projects for client companies, allowing a greater breadth of experience still. During interview, 160 projects across 57 separate organisations were referenced from a range of sectors including: financial services; health care; catering; logistics; manufacturing; retail; media; hi-tech; education; pharmaceuticals; international standards; and energy production. With respect to the specific theme that is the focus of this paper, obstructive user behaviours, there were 19,355 words of relevant discourse. In addition to talking in general about their experiences of this subject, direct references were made to 29 projects across 21 separate different organisations.

The Enochs of the modern workplace

In this section, the relevant empirical interview discussions are summarised under seven emergent themes. Each theme, each ‘Enoch’, describes one identified approach by which modern professional users obstruct IS implementations. The taxonomy of Enochs outlined in this section is later summarised (table 1). Each Enoch here highlighted represents a tool that can be legally deployed in a range of professional environments for the purpose of obstructing an IS implementation. In the following text, when it is said that an

implementation *failed*, this implies that it was cancelled before completion and that the system never went into production.

Enoch 1 Seeking and inventing inadequacy

This Enoch refers to determined, detailed and constant negative critique. Given time with a system, negatively motivated users can find endless faults in even the best environments. To continue the analogy, this hammer is always at hand. Some subjects considered such behaviour to be inevitable when user attitudes are negative. Consider for example, the following quotations from subject 3: “they would have pulled holes in it ‘till kingdom come, every last little thing would have been wrong and life would have been a nightmare”; “you will have hell for years from that department because they will pick at absolutely everything”; “if we get the one that we want, they will forever be picking holes in it”. As well as considering this an inevitable outcome of negative attitudes, subjects also expressed frustration with this, possibly due to its effectiveness. The following quotes all relate to IS implementations that failed: “They will find every reason, it could be the smallest things, the smallest feature the smallest piece of [company shibboleth used] that hasn’t quite been ironed out, or is not quite reported in the way that they think it should be, and they will find every reason to say that that’s not good enough” (subject 8); “I am really embarrassed because all they see is like: pick, pick, pick, pick, pick, fault, fault, fault, fault, fault, fault” (subject 12); “the negative attitudes are just, [sigh] you know, they find fault with every [interviewer interrupts]” (subject 12). Subject 11 spoke about users extending this criticism to the wider work environment and how system participation might, for example, interrupt lunch. Subject 14 described users who attacked the system’s documentation in a similar manner, going

through it with a fine toothcomb determined to find fault. This Enoch appears to be commonplace and on occasion, with persistence, it has proven to be effective.

Enoch 2: Passive resistance

In some cases, users simply do not participate. No objection or discussion, just passive non-participation. In a busy and pressured environment, this is often viewed as acceptable behaviour. Sometimes, genuine workplace pressures will cause a system to go relatively unnoticed. In other cases, potential users may actively ignore it. This phenomenon may occur at different stages in the process. During development, users may not provide necessary contributions thus obstructing training and systems analysis. The latter two of the following quotes refer to failed implementations: “They don’t help you to find that trivial correction” (subject 8); “I said ‘look we need to train some of your guys, you need to release a couple of people to come on some training’, ‘we’re too busy can’t do it’, ‘but it won’t be implemented without your people’, ‘I’m sorry we can’t do it’ and that was the total response” (subject 3); “if we’d been more successful in getting the initial levels of engagement, we would have gone on to be more successful [...] but we couldn’t get it started”(subject 2).

Alternatively, ‘workarounds’ allow nominally established systems to be ignored. Talking about a secure document repository, subject one said: “weeks and weeks of filling in forms to get the individual documents [...] I will just ring a few mates and get them to send me a hard copy, that won’t be up to date but at least I can get it”. In response to this, the interviewer specifically asked: “So your response is to work around using the system?” to which she simply answered “Yes”. Subject 12 described a similar situation where a system lay dormant

while people used personal contacts to get the information they needed. This latter system, although technically complete, never went into production.

Enoch 3: Deceptive participation

Deceptive participation wasn't raised during any interview but subject 12 mentioned it over lunch after the interview. She critiqued the empirical method suggesting that, routinely, user groups make noises that imply participation while the system champion is around then, once they have gone, the system is forgotten. This was clearly a scenario she was familiar with. Accordingly it has been included.

Enoch 4: Saturation and overload

Users invoking system paralysis through unpredicted usage. One subject provided an example of when users had intentionally overloaded a system: "everyone sort of phoned each other up, where all the terminals were, and they sort of got something on screen and said 'right were gonna press return guys, 3-2-1 now' [interviewer laughs] and all 39 terminals pressed return, it took about 40 seconds for the last one to respond because of course, the system sort of went druffff [...] he sort of smiled and said 'your response time isn't very good', so I went down to the head office and said 'we've got a problem here, an angry bunny'" (subject 3). Another subject described a similar event where user motivations were unclear. The cause might have been poor systems analysis or deliberate user obstruction, in either case this system only stayed in production for a few weeks before this unpredicted usage caused its decommissioning: "it enabled people to report their own accidents. Anyone who felt something had happened [subject laughs] could report it, so you got this influx of people who had an axe to grind, feeling responsible and wanting to put stuff on the system, so

you had all these accidents and incidents reported like, ‘the railing needs painting blue’ and they had to back track on the system eventually because all these people felt that they had to report [...] all of these union members were just filling the system with, reporting the same wobbly path stone or whatever, and it would all land on one manager’s desk and no-one told him it was coming, he just suddenly got all these actions on his desk and he had to go through separate paper work for each one, to close each one of them off” (subject 1).

Enoch 5: Lobbying

Users raising objections with senior actors in an attempt to obstruct progress. Subject 12 spoke about one occasion where lobbying ‘contributed’ to project failure but expressed that it had been *passive resistance* (Enoch 2) which did the real damage. Although he had often experienced lobbying, he had found its effects to be limited as the complaints “never really got to the senior ones”. The subject who spoke about lobbying the most (14) likewise had found it to be more of an obstruction than a fatal attack. Talking about ultimately successful projects, subject 14 said: “they would whinge enough, then they would want it to move up the line, ‘we want the top guy to come in and take a grilling’”; “it made things uncomfortable”; “they were a customer and if a customer came in with a complaint, I would then have to go in and say ‘well in actual fact, I don’t think that it’s [a] reasonable complaint’”. When asked if much of his time was occupied with diplomacy, he responded: “Yes quite a lot, and there’s an awful lot of that, there is an awful lot of diplomacy needed in organisations”.

Another subject described a project where lobbying not from ‘normal users’ but from a production manager had led to project failure. The seniority of this apparently vexatious actor, made him influential and able to effectively lobby directors. In the following

quotations, subject 2's frustration is apparent: "and then we discovered that the biggest jack the lad in the whole organisation, a guy who'd been divorced three times, run off with six secretaries, blah blah blah blah [voice raises in tone] he did it because he was a Luddite, he didn't like technology, so he polluted the attitude of the whole organisation towards this system [...] what it wasn't was a failure of, unmotivated users or poor models of user acceptance or poor strategies towards implementation or technology adoption [...] a third of a million pounds and they dumped it for SAP [voice turns passionate] and SAP wasn't going to be any better, it wasn't going to fix that guy who was a pain in the arse [...] the production manager stuffed it". The senior position of this actor empowered his lobbying, enabling it to deliver a fatal blow.

Enoch 6: Regicide and personal attack

In this Enoch, users target not the system but those who champion it. Personal attacks against system champions were raised by two subjects. Subject 14 described situations where: "they haven't taken the time to evaluate the system installed they have just said 'this is a ridiculous system, I am not happy with it' and instead of going for any particular flaw, they just go for the individual". Such attacks can be aimed directly at the champion or they might seek their social alienation. The following quotations refer respectively to both scenarios: "I think that most of this is on a personal level, certainly when you are involved in providing some new infrastructure you can get, sort of attacked in terms of, it could be an e-mail, it could be a missive saying 'this guy's an idiot', 'he doesn't know what he's doing [...]' there have been a number of cases like that where it has been of a personal nature" (subject 14); "there was a real resistance [...] you see I didn't have the [department name] background, my background

was in [department name]. ‘He doesn’t know anything’. Their whole philosophy was ‘actually [subject's name] is wrong’” (subject 11).

Enoch 7: Procedural obscurity

An implementation can be upset when users do that which is technically permitted but unexpected. Subject 9 implemented a system that included a configurable front end allowing users to personalise their desktops: “allowing them to feel that they have given their system more of a personal touch” (subject 9) then one user installed a screen saver that offended his colleagues. Although this caused the concept of empowering users to configure their own desktops to be re-considered, it was ultimately resolved between the individual and their line manager. A second example comes from an occasion when a subject was seeking the authorisation of an international standards committee to proceed with his implementation. In his words: “you have a roll call by country and the country votes to as whether it supports or does not support the proposition [...] so I presented the case and he then proposed the roll call, but when he proposed the roll call he switched suddenly to French [...] which is still an official language of [name of standards body], he did this for the simple reason that when you convert to French [...] the United States becomes États-Unis and comes right up the calling order, and the whole idea was to bring the United States, who was voting ‘no’ on this committee, to bring it right up the roll call so that the smaller countries like [country names] which were lower down would follow the United States as the big boy” (subject 6). Finally, subject 14 spoke about users looking for documentation standards that they would claim the system hadn’t met: “instead of being reasonable about accepting some new technology, they would put some barriers up and say ‘you haven’t included the proper documentation’, when they had done, it could have been a valid argument but it wasn’t a valid argument, time and

time again I would go down and say well look ‘you know they have done it to the new standard, we have got the new documentation, its been handed over’, but I could see there was a resentment” (subject 14). In each case, this Enoch was not successful causing little more than an inconvenience.

Conclusions and Discussion

Negative user attitudes can cause resistance. This research has identified a range of obstructive behaviours through which resisting users often seek to derail IS implementations in professional environments. An inductive method based on expert interviews has for the first time allowed expert experiences of user resistance behaviours to be gathered from multiple projects spanning several sectors and organisations. Using an historical analogy, these behaviours have been arranged in a taxonomy in which each taxon is presented as a modern day Enoch, a potentially destructive behavioural tool that disgruntled users can deploy. It is hoped that this behavioural taxonomy which is briefly summarised below (table 2) will enable practitioners to better understand user behaviours, the effect of negative attitudes, the affiliated project risks and their impact on IS implementations.

	Enoch Name	Description
Enoch 1	Seeking and inventing inadequacy.	Persistent and detailed negative critique. As no information system is beyond criticism, this Enoch is always at hand.
Enoch 2	Passive resistance	No debate or objection, the system and/or the implementation project are simply ignored.
Enoch 3	Deceptive participation.	The system champion is given the deceptive impression of success but no-one intends to continue participating upon their departure.
Enoch 4	Saturation and overload.	Users paralyse the system through unpredicted usage, demonstrating it to be 'not fit for purpose'.
Enoch 5	Lobbying.	Appeals and objections are raised with senior actors demanding the implementation be withdrawn.
Enoch 6	Regicide and personal attack.	A system's champions are alienated and/or pursued through formal complaints and grievance procedures. In this case the information system is not the target but those who champion it.
Enoch 7	Procedural obscurity.	An organisation's procedures or regulations are investigated to find or invent ways in which the implementation was not 'correctly' executed.

Table 2: Seven Enochs of the modern work place

With respect to the parameters that dictate an Enoch's effect or govern which of the Enochs are more effective, limited data emerged. However, it is clear that a broad spectrum of impacts is possible, ranging from total project failure to the negligible or simple to counteract. In the projects discussed, Enochs 1 (seeking and inventing inadequacy), 2 (passive resistance), 4 (saturation and overload) and 5 (lobbying) had on occasion caused implementations to fail. Enoch 5 (lobbying) only led to failure when the instigator was someone senior. It was, in fact, found to be quite ineffective when invoked by more junior

staff. Enoch 7 (procedural obscurity) was the least effective causing little more than an inconvenience. No reports of Enochs 3 (deceptive participation) or 6 (regicide and personal attack) causing project failure were forthcoming but, given the effectiveness of other Enochs, this should be considered a possibility. What is clear is that obstructive user behaviours have the potential to cause implementation failure. Subjects were all aware of this and in some cases reflected on their own naivety when, during earlier projects, they had assumed that success was inevitable when user participation was ‘obligatory’.

No correlation was found between the Enochs deployed and either the user objections or the type of implementation. However, subjects were sometimes able to predict which Enochs might be deployed based on their observation of past group behaviours or the more prevalent Enochs in a given organisation. In other cases they could spot the early signs of an Enoch’s emergence. Such insights often enable pre-emptive measures to be taken that will limit an Enoch’s effect or discourage its deployment. Alternatively, champions might come to an early realisation that insurmountable problems lie ahead. In either case, system champions found it beneficial to have an awareness of what might emerge. Within the confines of this research, little more can be said on an Enoch’s effect, its likelihood of emergence, forms of manifestation or appropriate counter measures. These are peculiar to each organisation and occurrence and are topics for future research.

Although interview subjects were often able to defend their systems from Enochs, there was a consensus that this often required substantial effort. Subject eight believed that, theoretically at least, user attitudes could always be turned around causing them to accept the system but that the amount of effort required to do so was often prohibiting: “You’ve got to work hard,

to restore [...] the relationship, restore their confidence in you, restore their faith and recreate the bond [...] build their confidence, build them up to trust you again and then start to bring them on the journey with you". She also expressed that the way to do this is often "unique [...] to the individual" requiring each person to be individually nurtured, which in many cases is not realistic. Although she believed that, theoretically, user attitudes could always be turned around, she acknowledged that this often was not realistically achievable. The overriding and undisputed view of subjects was that avoiding hostility in the first place was the best approach. Even for projects that ultimately succeeded, they described occasions where they had been emotionally or psychologically affected by hostilities and many more where substantive effort had been required to overcome problems. There was a consensus that, during implementation projects, care should be taken to cultivate and nurture user attitudes in the hope of avoiding hostility and the deployment of Enochs. This aligns with the social and cognitive psychology view that strong and established attitudes are difficult if not impossible to change (for example, Brock and Balloun, 1967; Batson, 1975; Frey, 1986; Burris, Harmon-Jones and Tarpley, 1997). With respect to IS implementations, although user attitudes will progressively strengthen and affect user behaviour (Zhang and Sun, 2009; Lee 2011), during a user's early encounters with a system they are absent or weak and open to change (Kim et al., 2009; Zhang and Sun, 2009). Good practice is to nurture user attitudes from the earliest stages to reduce the probability of later hostilities.

As well as contributing to theory, this research has significant implications for those who champion IS implementations. Perhaps the most important message being that the edicts of senior actors do to not necessarily render users powerless to resist IS implementations and that care should be taken from the outset to cultivate positive user attitudes. When negative

attitudes or the deployment of Enochs start to emerge, this needs to be quickly addressed before they ‘take hold’ and become increasingly problematic to resolve. With respect to the motivations of objecting users, a good practice emerged in which time is taken to understand and diagnose a user's objections. It was understood that users can be vexatious or selfish, but likewise objections can be caused by inadequate understanding or through a user’s ability to notice potential problems that system champions have overlooked. Management response to Enochs thus needs to be tailored according to the cause of the hostility. During interview, it was apparent that subjects did not object to resistance when users were motivated by the greater good of the organisation, indeed they viewed this as a standard part of the project communications. There was also a general acceptance that some systems should be resisted and that the emergence of resistance in many cases should cause champions to reflect.

To conclude the Luddite analogy, a final historical irony might be observed. In February 1812, Spencer Perceval’s Conservative government, intent on stamping out Luddite activity, introduced the Frame Breaking Act that made machine-breaking a capital crime and troops were sent in to control Luddite areas. These draconian measures had little effect on Luddite activity, thousands continued to take part while very few were executed. The irony is that, in an unrelated incident a short while later, Perceval himself fell victim to a violent death at the hands not of a disgruntled luddite, but of an irate merchant.

References

- Ajzen, I. 1985. From Intention to Actions: A Theory of Planned Behavior, in Action Control. In: Kuhl, J. and Beckmann J., eds. From Cognition to Behavior. Springer Verlag, New York, NY. 11–39.
- Ajzen, I. 1989. Attitude Structure and Behavior. In: Pratkanis, A.R., Breckler, S.J. and Greenwald, A.G. eds. Attitude Structure and Function Lawrence Erlbaum Associates: Hillsdale, NJ. 241–274.

Ajzen, I. and Fishbein, M. 2005. The influence of attitudes on behavior. In: Albarracin, D., Johnson, B.T. and Zanna, M.P., eds. *Handbook of Attitudes and Attitude Change*. Mahwah, NJ Erlbaum.

Allen, D. K., Brown, A., Karanasios, S., and Norman, A. 2013. How should technology-mediated organizational change be explained? A comparison of the contributions of critical realism and activity theory. *MIS Quarterly*. 37(3), 835–854.

Alsajjan, B. and Dennis, C. 2010. Internet banking acceptance model: Cross-market examination. *Journal of Business Research*. 63, 957–963.

Angst, C. M. and Agarwal, R. 2004. Central and peripheral routes to sustained technology usage. *Proceedings of the Workshop of the Special Interest Group on Diffusion, Transfer and Implementation of IT (DIGIT)*. Washington DC.

Bailey, B.J. 1998. *The Luddite Rebellion*. NYU Press.

Bajaj, A. and Nidumolu, S.R. 1998. A feedback model to understand information system usage. *Information & Management*. 33, 213–224.

Batson, C.D. , 1975. Rational processing or rationalization? The effect of disconfirming information on a stated religious belief. *Journal of Personality and Social Psychology*: 32, 176–184.

Behrend T.S. 2009. *Participation in Pedagogical Agent Design: Effects on Training Outcomes*. PhD Thesis, North Carolina State University.

Bhattacharjee, A. and Sanford, C. 2006. Influence processes for information technology acceptance: an elaboration likelihood model. *MIS Quarterly*. 30(4), 805–825.

Boakye, K.G., Ryan, S.D. and Prybutok, V.R. 2012. The intention of continued web-enabled phone service usage: A quality perspective. *Operations Management Research*.

Brock, T.C. and Balloun, J.C. 1967. Behavioral receptivity to dissonant information. *Journal of Personality and Social Psychology*. 6, 413–428.

Broeckelmann, P. and Groeppel-Klein, A. 2008. Usage of mobile price comparison sites at the point of sale and its influence on consumers' shopping behaviour. *The International Review of Retail, Distribution and Consumer Research*. 18(2), 149–166.

Burris, C.T., Harmon-Jones, E. and Tarpley, W.R. 1997. By faith alone: Religious agitation and cognitive dissonance. *Basic and Applied Social Psychology*. 19, 17–31.

Chaiken, S. and Eagly, A. H. 1976. Communication modality as a determinant of message persuasiveness and message comprehensibility. *Journal of Personality and Social Psychology*. 34, 605–614.

Chakraborty, I., Hu, P. J. and Cui, D. 2008. Examining the effects of cognitive style in individuals' technology use decision making. *Decision Support Systems*. 45(2), 228–241.

Compeau D.R. and Higgins C.A. 1995. Computer self-efficacy: development of a measure and initial test. *MIS Quarterly*. 19, 189–211.

Davis, F.D. 1989. Perceived Usefulness, Perceived Ease of Use and User Acceptance of Information Technology, *MIS Quarterly*. 13(3), 319–340.

Davis, F.D., Bagozzi, R.P. and Warshaw, P.R. 1989. User acceptance of computer technology: A comparison of two theoretical models. *Management Science*. 35, 982–1003.

Dillon, A. and Morris, M. 1996. User acceptance of new information technology: theories and models. In : M. Williams, ed. *Annual Review of Information Science and Technology*, Medford NJ: Information Today. 31, 3–32.

Donat E., Brandtweiner R. and Kerschbaum J. 2009. Attitudes and the Digital Divide: Attitude Measurement as Instrument to Predict Internet Usage. *Informing Science: the International Journal of an Emerging Transdiscipline*. 12.

Festinger, L. 1957. *A Theory of Cognitive Dissonance*. Stanford University, Stanford CA.

Fishbein, M. and Ajzen, I. 1975. *Belief, Attitude, Intention and Behaviour: An Introduction to Theory and Research*. Addison-Wesley Publishing Company, London.

Fitzgerald, G. and Russo, N. 2005. The turnaround of the London Ambulance Service Computer-Aided Despatch system (LASCAD). *European Journal of Information Systems*. 14, 244–257.

Frey, D. 1986. Recent research on selective exposure to information. In: L. Berkowitz, ed. *Advances in experimental social psychology*. Academic Press: New York. 19, 41–80.

Germain, M. and Ruiz, C.E. 2009. Expertise: Myth or Reality of a Cross-National Definition? *Journal of European Industrial Training*. 33(7), 614–634.

Germain, M. 2006. Stages of Scale Development and Validation: The Example of the Generalized Expertise Measure (GEM). *Academy of Human Resource Development*. Columbus, OH.

Gobet. F. and Campitelli, G. 2007. The role of domain-specific practice, handedness and starting age in chess. *Developmental Psychology*. 43, 159–172.

Guest, G., Bunce, A. and Johnson, L. 2006. How many interviews are enough? An experiment with data saturation and variability. *Field Methods*. 18(1), 59–82.

Harrison A.W. and Rainer Jr, R.K. 1992. The influence of individual differences on skill in end-user computing. *Journal of Management Information Systems*. 9, 93–111.

Hee-woong, K., Hock, C.C. and Yee, P.C. 2007. A balanced thinking-feelings model of information systems continuance. *International Journal of Human-Computer Studies*. 65(6), 511–525.

Hee-Woong, K. and Kankanhalli, A. 2009. Investigating user resistance to information systems implementation: a status quo bias perspective. *Management Information Systems Quarterly* 33(3).

Hirschheim, R. and Newman, M. 1988 Information Systems and User Resistance. *The Computer Journal*. 31(5), 398–408.

Hoffman, R.R., Shadbolt, N.R., Burton, A.M. and Klein, G. 1995. Eliciting knowledge from experts: A methodological analysis. *Organizational behavior and human decision processes*. 62(2), 129–158.

Hogg, M.A. 1996. Intragroup processes, group structure and social identity. In : W.P. Robinson, ed. *Social Groups and Identities: Developing the Legacy of Henri Tajfel*. Butterworth-Heinemann, Oxford, 65–93.

Jones, R.A., Jimmieson, N.L, Griffiths, A. 2005. The impact of organizational culture and reshaping capabilities on change implementation success: The mediating role of readiness for change. *Journal of Management Studies* 42(2), 361–386.

Kameda, T., Ohtsubo, Y. and Takezawa, M. 1997. Centrality in sociocognitive networks and social influence: an illustration in a group decision-making context. *Journal of Personality and Social Psychology*. 73, 296–309.

Kidd, A.L. 1987. *Knowledge acquisition for expert systems: A practical handbook*. Plenum Press. New York.

Kim, Y., Chun, J. and Song, J. 2009. Investigating the Role of Attitude in Technology Acceptance from An Attitude Strength Perspective. *International Journal of Information Management*. 29(1), 67–77.

Kolb, D.A. 1984. *Experiential Learning: Experience as the Source of Learning and Development*. Prentice-Hall, Inc. Englewood Cliffs, N.J.

Kroenung, K. and Bernius, S. 2012. Four Types of Attitudes in ICT Acceptance and Use? A Critical Assessment on the Basis of Empirical and Scientometric Data. *Proceedings of the 45th Hawaii International Conference on System Sciences*.

Krosnick, J.A. and Petty, R.E. 1995. Attitude Strength: An Overview. In: R.E. Petty and J.A. Krosnick, eds, *Attitude Strength: Antecedents and Consequences*, Lawrence Erlbaum Associates, Mahwah, NJ, 1–24.

Lee, W. 2011. An elaboration likelihood model based longitudinal analysis of attitude change during the process of IT acceptance via education program. *Behaviour & Information Technology*. 31(12).

Liao, C., Palvia, P. and Chen, J. 2009. Information technology adoption behavior life cycle: Toward a Technology Continuance Theory (TCT). *International Journal of Information Management*. 29(3).

Malhotra, Y. and Galletta, D.F. 1999. Extending the Technology Acceptance Model to Account for Social Influence: Theoretical Bases and Empirical Validation. In *Proceedings of the Thirty-Second Annual Hawaii international Conference on System Sciences-Volume 1*. IEEE Computer Society, Washington, DC.

Mackie, D.M., Gastardo-conaco, M.C. and Skelly J.J. 1992. Knowledge of the advocated position and the processing of in-group and outgroup persuasive messages. *Personality and Social Psychology Bulletin*. 18(2), 145–151.

Mak, B., Schmitt, B.H. and Lyytinen, K. 1997. User Participation in Knowledge Update of Expert Systems. *Information & Management*. 32(2), 55–63.

Moon, J., Kim, Y. 2001. Extending the TAM for a World-Wide-Web context. *Information and Management*. 38(4), 217–230.

Morris, M.G. and Venkatesh, V. 2000. Age differences in technology adoption decisions: implications for a changing workforce. *Personnel Psychology*. 53, 375–403.

Matier, P. and Ross, A. 2012. Computer system dropped after \$500 million spent. *San Francisco Chronicle*. Sunday 1st April 2012. [Retrieved 31st May 2013 from the World Wide Web: <http://www.sfgate.com/bayarea/matier-ross/article/Computer-system-dropped-after-500-million-spent-3450186.php>]

Onwuegbuzie, A. J. and Leech, N. L. 2007. A call for qualitative power analyses. *Quality and Quantity*. *International Journal of Methodology*. 41, 105–121.

Petty, R.E. and Cacioppo, J.T. 1986. *Communication and Persuasion: Central and Peripheral routes to Attitude Change*. Springer-Verlag New York, Inc New York.

Petty, R.E., Haugtvedt, C.P. and Smith, S.M. 1995. Elaboration as a determinant of attitude strength: Creating attitudes that are persistent, resistant, and predictive of behavior. In: R.E. Petty, C.P. Haugtvedt, S.M. Smith, eds, *Attitude strength: Antecedents and consequences*, Lawrence Erlbaum Associates, Mahwah, NJ. 93–130.

Reicher, S. and Hopkins, N. 1996. Seeking influence through categorizing self-categories: an analysis of anti-abortionist rhetoric. *British Journal of Social Psychology*. 35, 297–311

Reicher, S and Hopkins, N. 1996. Self-category constructions in political rhetoric; an analysis of Thatcher's and Kinnock's speeches concerning the British miners' strike (1984–5). *European Journal of Social Psychology*. 26, 353–371.

Rosenberg, M., Hovland, C., Mc Guire, W., Abelson, R. and Brehm, J. 1969. *Attitude organization and change*. Yale University Press. New Haven and London.

Saadé, R. and Bahli, B. 2005. The impact of cognitive absorption on perceived usefulness and perceived ease of use in on-line learning: an extension of the technology acceptance model. *Information and Management*. 42(2), 317–327.

Schepers, J., Wetzels, M., 2007. A meta-analysis of the technology acceptance model: Investigating subjective norm and moderation effects. *Information and Management*. 44(1), 90–103.

Selander, L., & Henfridsson, O. 2012. Cynicism as user resistance in IT implementation. *Information Systems Journal*. 22, 289–312.

Shumarova, E. and Swatman, P.A. 2007. eValue and Value-driven User Responses to Information Technology. *Electronic Markets*. 17(1), 5–19.

Tajfel, H. and Turner, J.C. 1979. An Integrative Theory of Intergroup Conflict. In : W.G Austin and S. Worchel, eds, *The Social Psychology of Intergroup Relation*. Brooks-Cole, Monterey, CA.

Turner, J.C. 1982. Towards a cognitive redefinition of the social group. In : H.Tajfel, ed, *Social Identity and Intergroup Relations*. Cambridge University Press, Cambridge UK, 15–40.

Usoro, A. 2000. Attitude as a factor in the use of information and communication technology for global planning. *BITWorld'00 Conference*.

van Birgelen, M.J.H., Wetzels, M.G.M. and van Dolen, W.M. 2008. Effectiveness of corporate employment web sites: How content and form influence intentions to apply. *International Journal of Manpower*. 29(8), 731–751.

Venkatesh, V. and Davis, F.D. 1996. A Model of the Antecedents of Perceived Ease of Use: Development and Test. *Decision Sciences*. 27(3), 451–481.

Venkatesh, V. and Davis, F.D. 2000. A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, 46(2), 186–204.

Venkatesh V. and Morris, M.G. 2000. Why don't men ever stop to ask for directions? Gender, social influence and their role in technology acceptance and usage behavior. *MIS Quarterly*. 24, 115–139.

Venkatesh, V. and Morris, M.G. and Davis, F.D. 2003. User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*. 27(3), 425-478.

Webster, J. and Martocchio, J.J. 1992. Microcomputer playfulness: development of a measure with workplace implications. *MIS Quarterly*. 16, 201–266.

Wikipedia, 2012. Attitude (psychology) [Retrieved 4th April 2012 from the World Wide Web: [http://en.wikipedia.org/wiki/Attitude_\(psychology\)](http://en.wikipedia.org/wiki/Attitude_(psychology))]

Wright, O. 2011. NHS pulls the plug on its £11bn IT system. The Independent, Wednesday 3rd August 2011. [Retrieved 31st May 2013 from the World Wide Web: <http://www.independent.co.uk/life-style/health-and-families/health-news/nhs-pulls-the-plug-on-its-11bn-it-system-2330906.html>]

Zanna, M. P. and Rempel, J. K. 1998. Attitudes: A new look at an old concept. In: Bar-Tal, D. and Kruglanski, A. W. eds. The social psychology of knowledge. Cambridge University Press. 315–334.

Zhang, P. and Sun, H. 2009. The complexity of different types of attitude in initial and continued ICT use. Journal of American Society for Information Science and Technology (JASIST). 60(10), 2048–2063.