



香港城市大學  
City University of Hong Kong

專業 創新 胸懷全球  
Professional · Creative  
For The World

## CityU Scholars

### The ethics of action research participation

Davison, Robert M.; Martinsons, Maris G.; Wong, Louie H. M.

#### Published in:

Information Systems Journal

Published: 01/05/2022

#### Document Version:

Post-print, also known as Accepted Author Manuscript, Peer-reviewed or Author Final version

#### Publication record in CityU Scholars:

[Go to record](#)

#### Published version (DOI):

[10.1111/isj.12363](https://doi.org/10.1111/isj.12363)

#### Publication details:

Davison, R. M., Martinsons, M. G., & Wong, L. H. M. (2022). The ethics of action research participation. *Information Systems Journal*, 32(3), 573-594. Advance online publication. <https://doi.org/10.1111/isj.12363>

#### Citing this paper

Please note that where the full-text provided on CityU Scholars is the Post-print version (also known as Accepted Author Manuscript, Peer-reviewed or Author Final version), it may differ from the Final Published version. When citing, ensure that you check and use the publisher's definitive version for pagination and other details.

#### General rights

Copyright for the publications made accessible via the CityU Scholars portal is retained by the author(s) and/or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights. Users may not further distribute the material or use it for any profit-making activity or commercial gain.

#### Publisher permission

Permission for previously published items are in accordance with publisher's copyright policies sourced from the SHERPA RoMEO database. Links to full text versions (either Published or Post-print) are only available if corresponding publishers allow open access.

#### Take down policy

Contact [lbscholars@cityu.edu.hk](mailto:lbscholars@cityu.edu.hk) if you believe that this document breaches copyright and provide us with details. We will remove access to the work immediately and investigate your claim.

This is the peer reviewed version of the following article: Davison, R. M., Martinsons, M. G., & Wong, L. H. M. (2022). The ethics of action research participation. *Information Systems Journal*, 32(3), 573-594, which has been published in final form at <https://doi.org/10.1111/isj.12363>. This article may be used for non-commercial purposes in accordance with Wiley Terms and Conditions for Use of Self-Archived Versions. This article may not be enhanced, enriched or otherwise transformed into a derivative work, without express permission from Wiley or by statutory rights under applicable legislation. Copyright notices must not be removed, obscured or modified. The article must be linked to Wiley's version of record on Wiley Online Library and any embedding, framing or otherwise making available the article or pages thereof by third parties from platforms, services and websites other than Wiley Online Library must be prohibited.

**Robert, Maris, Louie**

## **The Ethics of Action Research Participation**

### **Abstract**

Action research (AR) involves one or more researchers and a client organization. Many guidelines for and reports of the research method have been published. However, the ethical issues associated with AR have been largely neglected. Our review of the AR literature found that ethical dilemmas and their resolution are rarely and inconsistently reported. Stimulated by this neglect and our personal experiences, we aim to raise awareness and understanding about the ethics of planning, conducting and reporting AR. We identify and discuss four issues of concern that merit specific ethical attention when conducting AR: collaboration, competence, persistence, and consent. We draw on these four issues in an analysis that augments the principles and criteria for canonical AR proposed by Davison et al. (2004, 2012), and later reified as Integrated Action Research (IAR) by Davison et al. (2021). Our guidance includes an additional principle of AR and ten associated criteria to address the ethics of AR participation.

**Keywords:** Action Research, Research Method, Ethics, Research Collaboration, Research Principles, Research Consent

### **1 Introduction**

Action Research (AR) has become an increasingly important method in recent decades.

Action researchers aim to simultaneously make a positive real-world impact and contribute to academic knowledge. AR projects are being undertaken by those eager to both help improve the performance of an organization and contribute to the scholarly literature (Avison et al., 2018; Eden and Huxham, 1996; Hult and Lennung, 1980). AR is premised on researcher interventions: researchers conduct an independent diagnosis of a problem or situation, then

draw on theory to plan for actions to address the specific problem or situation. The common aims are to improve organizational performance and benefit stakeholders.

The importance of research ethics has been acknowledged for decades (Diener and Crandell, 1979; Israel and Hay, 2006). An early account of AR in the Information Systems (IS) discipline included the observation that “action research combines theory and practice (and researchers and practitioners) through change and reflection in an immediate problematic situation within a mutually acceptable ethical framework” (Avison et al., 1999, p.94). Meanwhile, McKay and Marshall (2001, p.55) emphasised that the researcher “is ethically bound to ... try to alleviate the problem”.

Although action researchers have paid much attention to the research-practice dichotomy and the role of theory in AR, the ‘mutually acceptable ethical framework’ has been largely neglected. The few studies that include information on ethical issues tend to do so superficially. For instance, Shah et al. (2007a, p.764) note that they drew up “a formal research agreement ... to define the ethical guidelines”. Unfortunately, they do not provide any details about its content. Many general principles of research ethics apply as much to AR as to any other research method. However, we suggest that the participative nature of AR, where researchers engage intensively with clients, creates additional ethical nuances that need to be tackled directly. Greenwood (2002) has identified ethical concerns as one of the unmet challenges for action researchers. We thus agree with Myers and Venable (2014, p.802) about the importance of initiating “a dialog and debate about the need for ethical principles”. Such principles will inevitably be normative. Thus, we introduce and examine ideas about actions that should be considered or taken.

In this article, we explore some critical ethical issues associated with AR. We ultimately augment the set of five principles for AR developed previously (Davison et al., 2004, 2012, 2021) by formulating a sixth principle that addresses ethical issues (see

Appendix 1). We expect that this new principle, and its associated ten criteria, will be valuable to practicing action researchers who aim to engage ethically in organizational change initiatives.

## **2 Ethical Research**

Ethical values may differ based on personal and cultural factors. Nevertheless, we suggest that a more normative set of guidelines is useful and we encourage researchers to reflect carefully on their ethical stances. We draw attention to four key issues of AR ethics: collaboration, competence, persistence and consent. Our selection of these four issues stems from their salience to contemporary AR. The collaborative nature of AR has been emphasised since the earliest writings (e.g. Baskerville and Wood-Harper, 1996). Ensuring that action researchers are competent to engage with clients is a critical issue for AR (Chughtai and Myers, 2017) as well as research more generally. Persistence is seen as an ethical virtue (Kohli and Kettinger, 2004). Finally, consent is central to the ethical requirements for conducting research with human subjects throughout much of the world.

Ethical considerations are fundamental to any socio-technical enquiry (Chatterjee et al. 2009; Mingers and Walsham 2010). Chatterjee and Sarker (2014) note that three major ethical perspectives are relevant to researchers: consequentialism, deontology and virtue. Consequentialist ethics usually focus on the generation of positive outcomes for the stakeholders whose interests are central to the topic of enquiry. Such beneficence is of particular importance in AR, where researchers have an obligation not to harm the client. We suggest that these positive outcomes will be easier to achieve when action researchers strive to be competent, work collaboratively with clients, and are persistent in their efforts.

Deontological ethics are associated with duties. These also involve respecting the rights of individuals (Chatterjee and Sarker, 2014), so long as the rights of others are not impinged upon. Consent is critical to this respect of rights, since client team members must freely consent

to participate in AR projects. Both researchers and clients have duties in the context of an AR project. For instance, researchers have the duty to protect the interests of the client, including confidentiality. They also have a duty to develop personal competence in the domain area of the research topic, and then to persist with the AR project until it is completed. Meanwhile, clients have the duty to participate, since collaborative participation is central to AR.

Finally, virtue ethics relate to the character of the individual actor and the assertion that good people (or institutions) will do good things. For instance, Kohli and Kettinger (2004) suggest that patience and flexibility are two of the desired virtues for action researchers, given that AR projects may take considerably longer than expected and often deviate from the plans developed in advance (cf Descola, 1996). We suggest that persistence is closely associated with patience: action researchers should not give up on the project easily, but instead should persist until it is completed. Braa et al. (2004) likewise suggest that AR is often characterised by both flexibility and improvisation.

We suggest that the practice of AR implicitly requires an ethical stance with regard to a number of activities, each of which is related to *how* the action researcher engages with organizational clients in an AR project. AR is frequently described as being collaborative (Baskerville and Wood-Harper 1996) with an organization or community engaged as a partner (Brydon-Miller et al., 2006). This creates the expectation that both researchers and their partners will be actively and interactively involved throughout AR projects. But researchers may play different roles in an AR project. In addition to being an explorer or investigator, they may be a facilitator, expert, advisor or confidant. Each role involves some ethical considerations. Our ethical foundation may be revealed by our action research practice as we 'live our ethics' (Hilsen, 2006).

There are ethical issues associated with many of the activities in which action researchers engage. However, empirical AR accounts seldom describe the precise nature of the

“ethical framework” (Avison et al. 1999; Rapoport 1970). Consequently, we lack nuanced accounts of how ethical concerns are addressed or indeed if they are addressed. As a result, readers have little sense of how ethical considerations moderated or influenced researcher behaviour or how the ethical framework (if any) was constructed and followed.

Based on our experience as journal editors and reviewers of AR manuscripts as well as participants in AR projects, we observe that it is very rare to have an explicit ethical framework or even consideration of the ethical principles that should be followed. There is seldom even any discussion about ethical issues among the research team or with clients as a Researcher Client Agreement (RCA) is negotiated. The RCA offers an opportunity to set an ethical foundation, but ethical issues are almost invariably left to the imagination and discretion of each participant in the AR project; if issues do arise they tend to be handled on an ad-hoc basis.

An informal approach to AR ethics may be convenient, but the informality allows for considerable latitude to interpret how ethical considerations should be manifested, if they are manifested at all. Formalising a set of ethical principles and criteria would have the merit of raising awareness and understanding of ethical considerations among action researchers more generally. It would also help to ensure that ethical issues are reported consistently and in some detail, which will be of value to the readers of AR papers. Students in particular will benefit since there are currently few published accounts indicating how ethical issues can be dealt with. Since the ethical framework is expected to be mutually acceptable to clients and researchers, it is essential to cover the rights and duties for all parties. In this paper, we aim to address these shortcomings and to explore the ethical issues associated with the practice of action research.

In order to illustrate the dilemma of an informal approach to ethical issues, consider the following scenario that is based on the interactions of one of the authors with a client. After conducting a few initial meetings, the author realized that his knowledge about the client’s business was inadequate. For instance, he often encountered the situation where he did not

understand their business jargon and acronyms. The client had many unique business practices, which might be unfamiliar even to seasoned industry experts if they had not worked for or with this client. The ethical issue that arose was whether or not the researcher should proceed with the AR project without equipping himself with further client-specific contextual knowledge and thus enhancing his professional competence. In the absence of a set of formal ethical principles that could provide guidance, many circumstantial factors might influence the decisions that the researcher would need to make. For instance, some researchers may face time pressures to proceed and haphazardly learn the details bit by bit during the course of the AR cycle. Other researchers may ignore the issue altogether and pretend to understand what they hear since they may worry that the client would otherwise view them as incompetent. It was fortunate that the author had undertaken many consulting projects previously and was not afraid to bring up the issue with the client. The client was also kind enough to offer seminars to bring him up to speed with the necessary knowledge. But would all AR scholars be similarly blessed?

Following this introduction, we undertake an exhaustive review of the AR literature as practiced within the IS discipline. We draw on this literature review to develop a principle and ten criteria to guide the ethical practice of action research. We formulate these criteria in the same style as that undertaken by Davison and his colleagues (2004, 2012, 2021) where they laid out prescriptive principles and criteria for AR more generally.

### **3 Ethics in Action Research**

We start this review with an overview of ethical issues as they pertain to AR. We then move into a more detailed treatment of specific issues. These lead us, in the following section, into an assessment of four specific ethical issues that warrant focused attention: collaboration, competence, persistence, and consent.

Our review of the literature is comprehensive: we constructed a database of 136 articles (published from 1970 to the present) describing the empirical practice or polemics of IS AR,



in addition to influential non-IS AR articles. We primarily refer to the same 13 journals<sup>1</sup> that Avison et al. (2018) used in their review of the barriers to the adoption of AR<sup>2</sup>. Across this set of 136 articles, we searched using the following keywords (where \* denotes zero or more additional letters) that we believed would be most strongly connected with ethical issues: ethic\*, duty/duties, deontol\*, conseq\*, right\*, collab\*, responsib\*, particip\*, virtu\*, involv\*, emancip\*, consen\*, persis\*, compet\*. We then read the text immediately before and after the occurrence of the keyword so as to establish the possible relevance of the article to our enquiry. As a result of this process, we identified many instances of researchers describing what they had done or thought about when considering or dealing with ethical issues. We draw on these descriptions in our review of the literature, and thus claim that our review reflects both historical and contemporary IS AR thinking with regard to ethics.

A fundamental objective of AR is to ameliorate a problem situation and create a positive outcome for the organization and its stakeholders through the process of enacting changes. We regard this principle of beneficence as the basic ethical premise of action research. However, we acknowledge that there are several ethical dilemmas that can complicate the realisation of this principle. Rapoport (1970), drawing on his own experiences as well as those of the Tavistock Institute for Human Relations, delineated three such dilemmas, which he referred to as the goal, role and value dilemmas, which may occur in isolation or in combination.

### ***3.1 Goal, Role and Value Dilemmas***

The goal dilemma is inherent in the tension between the practical problem faced by the organizational client and the research question that drives the action researcher. Although the researcher is trying to help the client, their interests are rarely exactly aligned as the client looks primarily for a solution to a problem and the researcher looks primarily for a publishable

---

<sup>1</sup> AMIT, CACM, CAIS, Database, EJIS, ISJ, ITP, JAIS, JIT, JMIS, JSIS, MISQ, SJIS (note, among the AIS basket journals, ISR alone has not published any AR articles).

<sup>2</sup> The complete list of 136 articles is available from the authors

contribution to knowledge. Clients are thus free to provide information about what they see as the practical problem, but researchers should not take this information as a mandate; indeed, a key component of AR is the independent diagnosis that is performed by the researcher. Thus, there is an implicit understanding that researchers and clients work collaboratively to find a solution to a problematic situation (Rapoport, 1970).

Action researchers have the duty to serve two masters (McKay and Marshall, 2001): the academic community and the client. The role dilemma is faced by all researchers because of this twin set of duties: they need both to make an academic contribution and a practical contribution. If the researcher is simultaneously an organizational insider, then the role dilemma is exacerbated and there is a risk of 'role contamination' (Rapoport, 1970; Walton & Warwick, 1973), though this may not be reported. Olesen and Myers (1999) investigated the adoption of groupware in an organization where Olesen was simultaneously an employee, though she was not a member of the teams at the heart of the investigation. Nevertheless, in such cases action researchers have to be very careful what they promise to a client (essentially their own employer) given the inherent expectation that they should both improve organizational circumstances and meet research objectives (Kock and McQueen, 2004; Chiasson et al., 2008; Davison, 2012; Durcikova, 2018).

Finally, the value dilemma relates to the differences in values between the researcher and the client. This is the most complex of the dilemmas because and the least amenable to resolution because of the fundamental differences inherent between researchers and clients. It is highly unlikely that the values of clients and researchers are consistent or synchronised with each other. For instance, as Baskerville and Wood-Harper (1998, p. 92) observe, "clients may place a high value on quick, decisive action", but researchers typically expect to work independently and cautiously in the pursuit of knowledge with protracted reflection before they commit themselves to action. Although this action may be theoretically interesting, it may also

increase the level of risk for the client (Mumford, 2001). Indeed, consideration of risks associated with the planned intervention needs to be part of the ethical framework. Baskerville (1999) notes the risk that the researchers lose sight of their obligations to develop scholarly knowledge, perhaps ‘going native’ as they develop significant rapport with the client.

Mumford (2001, p. 15) reported how she was always able to avoid working on projects where she disagreed with the ethics of the organization. For instance, she always refused to work on projects “which would involve employee redundancy”, reflecting both a deontological and a consequentialist stance: she expressed a duty of care to the employees. Researchers with a more critical interest may have an emancipatory goal for employees, aiming to ameliorate circumstances for them (Wastell et al., 2004; Kemmis and McTaggart, 1988). Nevertheless, attempts to empower employees may paradoxically result in their psychological enslavement (Davison and Martinsons, 2002), for instance if those employees prefer not to be empowered at all. Therefore, a virtuous researcher’s efforts to protect employees’ rights and encourage their participation may not be appreciated or lead to positive outcomes.

Action Researchers are not immune to the growing interest in environmental, social and governance (ESG) issues. The chairman and chief executive of BlackRock has stated that ESG concerns are now on a par with the quest for financial returns (Landy, 2020). This represents a radical change, and perhaps a tipping point, for the business world as well as those who conduct AR in business organizations. However, not all researchers may be as ethically principled or fortunate as Mumford (2001).

The complexity of the value dilemma becomes more apparent when action researchers consider how they enact their responsibility to involve all relevant stakeholders. Such involvement is essential if they hope that their proposed ‘solution’ to the organizational problem situation will effectively consider the legitimate interests and needs of all parties. However, any action plan is likely to prioritise the interests of some actors over those of others

(Hedström, 2007). Action researchers should be careful how they align themselves with any particular group within the organizational context (Salmela, 2008). This is a tough challenge as their very presence in the organizational context often depends on the continued goodwill of specific managers who are unlikely to view favourably action researchers who deviate from helping achieve organizational objectives.

If the researcher is also an organizational insider (e.g., Olesen and Myers, 1999), then the ethics of the situation become more complex. There is the potential for conflicts of interest and even for the researcher to compromise either her continued employment or her independence as an action researcher. Mumford (2001, pp. 15-16) noted tensions of this type when she worked as an action researcher in the 1970s. She reports that “she was often accused, by left-wing academics, of being a tool of management and of using participation to make users accept systems which they should be fighting and rejecting. It was suggested that she should be helping employees to resist innovation, not accept it”.

### ***3.2 Potential for Conflicts***

As action researchers reflect on their values, they need to consider how they represent themselves to members of the client organization (Morton, 1999). Even though they may claim impartiality and a neutral stance (Chiasson et al. 2008), organizational employees may accuse them of deception regardless of how they represent themselves. For instance, researchers may be regarded with suspicion (Street and Meister 2004; Young et al. 2016; Mumford, 2001) if their data collection is viewed as a precursor to organizational changes such as downsizing, redundancies or restructuring. In consequence, if conflicts emerge between client and researcher, it is unlikely that a successful outcome can be realised (Avison et al., 1999).

Academics commonly collect and analyze data before writing it up for publication in a scholarly venue. Their data subjects usually have no means to refute the presented information. The publication requirement of the action researcher(s) must be explained very early in a

project. It is reasonable for a client to read any paper prior to its submission and even to request modifications in order to ensure accuracy and secure confidentiality (Davison et al., 2004). Davison and Vogel (2000) reported how they toned down some of their arguments prior to submission following feedback from the CIO, their key organizational stakeholder. This raises a fundamental question about the ownership and truthfulness of the findings and their dissemination (Locke et al. 2013) that is particularly salient if the author team includes both researchers and client team members.

Conflicts between the quality of the research and the quality of the advice given may be difficult to resolve ethically; ultimately a trade-off may be required. What will the action researcher do when faced with a difficult choice: continue with a risky or even faltering action plan and intervention that is theoretically interesting but has the potential to damage corporate interests or switch to a well-established but theoretically more mundane (or even atheoretical) approach that is safer for the organization? This situation, which is redolent of the goal dilemma, is central to the concern that AR tends either to have too much action or too much research (Dickens and Watkins, 1999). Researchers should always keep in mind their duty of care to the client organization and its employees.

A consequentialist view would be that the researcher has an ethical obligation to create a positive outcome for the organization, only suggesting actions that improve the problem situation (Baskerville and Wood-Harper, 1996, 1998), even though this may constrain the researcher from reaching theoretically interesting conclusions. Researchers should be aware of such dilemmas *in advance*, and be prepared, ideally with a contingency plan. Keynes' (1936, p.383) assertion that "ideas, ... both when they are right and when they are wrong, are more powerful than is commonly understood" is all too apposite. Both Lewin (1945) and Ghoshal (1996) observed that theories must be appropriate for the organizational context. Scholars who venture into the organizational arena with theory-in-hand beware! If, by dint of your academic

enthusiasm, you neglect the interests of the organization and foist on them a damaging process or solution based on a theory that is of intellectual interest only to you, then watch out. In more litigious societies, professional indemnity insurance may be advisable. In order to avoid such a calamitous outcome, we suggest that you invest in a water-tight researcher client agreement (Davison et al., 2004, 2012) that protects both your interest and that of the client organization. Discussing these issues with the client from the outset of the AR project can help to avoid the conflicts that we describe here.

### **3.3 Summary**

Through our review of the literature we found that many researchers have faced ethical dilemmas and conflicts when conducting AR. Rapoport's (1970) role, goal and value dilemmas are notably salient and are commonly encountered. We suggest that a more explicit treatment of the ethical issues that are commonly encountered in AR, and the development of ethical guidelines, will benefit researchers who currently face the ambiguities associated with ad hoc ethical practices. In the following section, we draw on this review of the literature and the experiences of ourselves and others (cf Rapoport, 1970) to reflect on the ethics of AR. We focus on the participation in which researchers and clients engage, inductively distinguishing four issues: collaboration, competence, persistence, and consent.

### **4 The Ethics of Participating in Action Research**

The participation of both researchers and clients in AR projects raises ethical issues given their different roles, goals and values (Rapoport, 1970). For instance, researchers are often motivated by the goal of needing to publish their research, whereas clients are usually motivated by the need to solve a problem. We argue that when both researchers and clients consider the ethics of their roles and responsibilities, they may be motivated to enact behaviours that are actually in their own best interests, in effect overcoming the goal dilemma. These can then lead to outcomes that satisfy both clients and researchers.

However, an action researcher cannot merely function as a disinterested observer. Instead, there is a need “to clarify and represent his own ethics and values” (Susman and Evered, 1978, p.589). As Baskerville (1999, p.26) explains, “researchers who do not carefully explain their research orientation may mislead clients who are expecting consulting-type performance, creating an ethical breach regarding informed consent”. Thus, not only must researchers strive to ensure that they and their clients participate, but they also have to educate clients about this participation and its implications for the organization. Once more, a detailed RCA that specifies the roles and responsibilities of both the research team members and the client team members (Davison et al. 2004, 2012) is likely to be helpful. In the following four sub-sections, we explore the nature of ethical participation in more detail, examining the ethics of collaboration, competence, persistence and consent.

#### ***4.1 The Ethics of Collaboration***

Action researchers do *not* exercise control over all the activities of a project (Davison et al., 2004). Instead, and this is a fundamental issue for AR, they work collaboratively with their clients, so as to ensure that the actions proposed are acceptable to both the researcher and the client. This of course imposes a duty and responsibility on the client to be deeply involved in the AR process, even if they do not really want to be. This includes involving organizational team members in various activities central to AR, notably problem diagnosis and action planning.

There are likely to be significant financial and logistical costs associated with taking employees out of their routine activities (Shah et al., 2007b). Thus, the researcher needs to be aware that it may be difficult to persuade the members of a client organization to participate. Sandberg and Mathiassen (2008) documented four related problems commonly associated with participation: not showing up for meetings, saying nothing in meetings, answering questions late, and procrastinating. In a world where work from home and other types of

remote work have become common, the participation problems are expected to be more severe.

Common sense dictates that researchers in particular must exercise both restraint and flexibility as they develop these expectations for collaboration. For instance, the researcher should not force continued participation when that would imperil the survival of the client organization. For example, it may be unethical to demand that an AR project be continued as planned when a client organization is struggling to survive in adverse social or economic circumstances, such as the recent coronavirus outbreak. However, we equally see evidence of AR projects where both researchers and client team members or managers are deeply and collaboratively involved (e.g. Braa et al. 2004; Kohler et al. 2011; Wastell et al. 2004). Wong and Davison (2018) describe how client team members were actively involved in problem diagnosis, action planning and intervention, and the later evaluation of the project.

Baskerville and Wood-Harper (1998) suggest three different types of involvement: collaborative, facilitative, and expert. The implication of *collaborative involvement* is that the researcher and the client team members work closely together in the project. This suggests a deep level of involvement with the researcher working on tasks with the client. The researcher and client will jointly plan interventions.

In contrast, *facilitative involvement* emphasises that the researcher has a primarily facilitative or supportive role. There is a significant differentiation of tasks, and the client will do the bulk of the work, including deciding which interventions will be performed. Finally, with *expert involvement* the researcher is acknowledged as an expert by the client and it is the researcher who will undertake the responsibility of determining the problem solving approach and the nature of the interventions to be taken. During the course of a project, the role of the researcher may vary and must in any case be determined by the knowledge and skill levels of



both the researcher(s) and the client team members. Some evolution of role may occur as the level of knowledge develops among the client team members.

In order to examine the nature of collaboration in detail, we analyse it within the five stage AR cycle (Susman and Evered 1978), later modified by Davison et al. (2004, 2012). In the first stage of the cycle the action researcher commonly undertakes an independent **diagnosis** of the problem situation, as experienced by organizational employees. Here, the active cooperation and collaboration of those same employees needs to be secured.

The action researcher will typically conduct extensive interviews with stakeholders of the client organization as well as observe activities taking place in the work environment. They may apply one or more instrumental theories to guide and inform the diagnostic process (Davison et al. 2012). Collecting data from employees requires their participation. The ethical obligation thus applies to both researchers (they should do the independent problem diagnosis, not just accept the client's perspective of the problem) and clients (they need to engage in the diagnostic process and facilitate the research process). The involvement of non-management client team members is particularly valuable because they have first hand experience of the problems.

As the diagnosis is completed and the process turns toward the **formation of an action plan**, once again both researchers and clients have key roles to play. While the onus of responsibility will be on the researchers to identify suitable focal theories to drive the change process, the clients must play an active role as well. They must understand the change-related implications of the theories that the researchers identify and be prepared, where necessary, to object to those same theories. Although Lewin (1945) is famous for noting that “there is nothing so practical as a good theory”, it is also true that “there is nothing so dangerous as a bad theory” (Ghoshal 2005). Here, a bad theory could be one that leads to changes that damage the organization.

If the client fails to participate in the action planning process, including the selection and application of theory, then there is a strong likelihood that the planned action will not meet the client's expectations. It may even push the organizational change process in a direction that the client does not desire at all. Thus, it is in the best interests of the client to be actively involved in the diagnosis and action plans. It is important to note that while it may be tempting for the researcher only to involve managers in the action planning process, this is likely to be a major error. Instead, all significant employees (or their representatives) should be involved, in particular those who will be directly affected by the planned change.

If the employees who will be affected by the change are not involved in its planning, then there is a high chance that they will subsequently resist the implementation of the planned change (cf Vroom and Jago, 2007). Olesen and Myers (2001) experienced this situation when their proposed plans for changing the way IT was to be used among senior managers in a university failed to consider the interests of the managers' personal assistants. The personal assistants effectively hijacked the change process by refusing to cooperate and thus stymied the entire project, which was shortly thereafter abandoned. Similarly, as Davison et al. (2012, p.781) experienced, failing to include key organizational members in action planning related to the implementation of a new knowledge sharing platform led to the team leader commenting "that the new knowledge sharing procedures were insufficiently superior compared to existing practice to warrant her personal endorsement of them to her colleagues". Thus, it is essential for the researchers both to secure the active participation of all salient stakeholders, and to inform them clearly and convincingly about all planned changes.

The actual **intervention** by the researcher, following the confirmation of the action plan, must again involve many of the client's employees and managers, for they will enact the planned changes. Their participation is thus central to the success of the AR. They will

need to engage in new working practices, use old technologies in new ways or acquire skills in completely new technologies. They may also need to abandon comfortable working practices that they had applied for many years. Inadequate employee involvement and incentives can doom the actual adoption of a new technology even when employees espouse their acceptance of it during the planning and design stages (Davison et al., 2013; Martinsons et al. 2017).

Despite the challenges associated with these changes, employees will ideally participate willingly and voluntarily rather than reluctantly and mandatorily. Willing and voluntary participation is more likely to lead to a successful outcome because the employees will be less likely to reject the changes. Encouraging this willing participation is a key challenge in an AR project. This is due to a common perception of employees that the action researcher is a trouble-making interloper who only represents the interests of management and neglects those of employees. Wong and Davison (2018) illustrate an effective intervention process, documenting not only how they persuaded management to approve the changes, but also how those changes were designed with the employees' needs in mind. As a result, no resistance to the changes was experienced and management proved to be more than happy with the outcome.

The last two stages of the AR cycle are **evaluation** and **reflection**. Evaluation refers to an analysis of whether the intervention achieved the intended objectives. Reflection refers to a broader appreciation of the change process and the identification of future change possibilities. Both evaluation and reflection are associated with the dual nature of the researcher's responsibility to both clients and the scholarly community (Cole et al., 2005; Davison et al., 2004). It is important that client managers and employees participate in each of these activities. For instance, it would be entirely reasonable for the researcher to involve key client team members in efforts to theorise inductively from the data collected in the

project, perhaps iterating between theory drafts created by the research team and then commented on by the client team.

While managers need to evaluate if their objectives have been met, employees are likely to be on the front line of the change process and will have experienced those changes first hand. Researchers should continue to engage with the employees to evaluate the change process not only in terms of intended outcomes, but also in terms of unintended consequences. Wong and Davison (2018) provide a detailed account of both manager and employee evaluations of the changes. The corporate managers also reflected on the success of the intervention and agreed that it represented a ‘proof of concept’ that could be built on in future actions elsewhere in the organization. The ethics of collaboration are now captured by criteria 6a, 6b, 6c and 6d – see Table 1 below.

#### ***4.2 The Ethics of Competence***

In order to participate usefully in an organizational setting, action researchers have a duty to develop cognitive competence with respect to the social and historical context, the industry, and the nature of work in the organizational client’s world (Martensson and Lee, 2004). They must understand the language (jargon, special terminology) used by the client team members, and be sensitive to cultural differences both among client team members and between themselves and the client (Hatzakis et al. 2007). They must also be familiar with the methods, tools, theories and techniques that they will be using as they interact with the client (Schein, 1987).

Action researchers must thus develop a degree of professional competence, in both the method and in relevant domain knowledge. Shah et al. (2007a) note that the first author spent a considerable amount of time developing knowledge of the organization. When they have achieved cognitive competence, they will be able to engage in meaningful conversations

with clients as they diagnose problems and plan interventions. However, this kind of competence acquisition is rarely mentioned in the literature.

Reading an AR account, we often have the impression that action researchers are omniscient in the client domain. However, as Davison (2021) notes, few researchers ever explain how they develop their situational knowledge let alone omniscience. A reader who is unfamiliar with AR might be misled by this insouciant omniscience into thinking that domain knowledge is so easily acquired that there is no need to devote much space to describing it. Nevertheless, Thompson (2002, pp.194-195) reported how his first task in the field was to obtain “a high-level understanding of the reporting process across several clinics ...: in all, twelve clinics were visited”. Furthermore, Shah et al. (2007a, p.764) reported that “the first author spent a considerable amount of time building up knowledge of the organization”.

Chughtai and Myers (2017) write at length about the activities that field researchers need to undertake before they negotiate entry into a field site. Key among these activities is developing “some understanding of the world where she is to be thrown” (ibid. p.815), referring to Heidegger’s (2011) concept of ‘thrownness’, i.e. “the [spatial] state one finds oneself in” (Chughtai and Myers 2017, p.802). They explain that this pre-entry development of context-specific knowledge will ensure that, on arrival, the researcher can have sensible conversations with the indigenous inhabitants of the field. While the ability to engage in those conversations may reflect the background knowledge that the researcher has acquired over many years, it also reflects the more recently acquired knowledge that is predicted to be useful.

We strongly recommend not only that action researchers seek to acquire the relevant knowledge about the client domain before being thrown into the field (cf. Heidegger 2011) but also that they should also write up this knowledge acquisition process in their formal account of the AR project. The ethics of cognitive competence lie in the representation of the

researcher to the client. A failure to achieve cognitive competence, or worse, concealing one's incompetence, constitute a form of deception of the client, who would not want to engage incompetent researchers. We suggest that it is unethical for a consultant to dive into an AR project without adequate preparation. Thus, we also denounce the 'fake it till you make it' approach to consulting (Quast 2017) that may spill over into AR. The action researcher must balance professional credibility against the need to learn about the client context and problem (Bourgoin and Harvey 2018).

Wong and Davison (2018) contribute to the AR literature and this competence development process by suggesting that a **pre-diagnostic learning phase** should precede any more formal engagement with the objective of preparing all parties (researchers, clients) for the subsequent field engagement. This pre-diagnostic phase can also function as a low-risk dry run for the main project. The different parties get to know one another and develop a shared ethical compact.

The action researcher is also obliged to assist the collaborating organization to understand the academic dimensions of the project, notably the instrumental theories in use, prior to commencement of the diagnostic stage. They note (ibid., p.554) that this pre-diagnostic phase enabled them "to develop sufficient understanding of the various nuances of the context to persuade all stakeholders to accept our involvement. These nuances covered both linguistic issues, such as the technical vocabulary used by employees, and sociological issues, such as employee-manager relations". A detailed account of this pre-diagnostic phase can be found in Appendix 2. The ethics of competence are now captured by criteria 6e and 6f – see Table 1 below.

#### ***4.3 The Ethics of Persistence***

AR is notable for the amount of time that is needed to complete a project. Occasionally, an AR project might be completed in 12 to 18 months but it is more often the case that projects

last much longer than this. Kohli and Kettinger (2004) report how their two-cycle AR project took the best part of a decade to complete. Meanwhile, the Health IS Project (HISP) led by Braa and colleagues using the Networks of Action method commenced in 1994 and is still going (Braa et al. 2004; Sahay et al. 2013).

The lengthy duration of an AR project poses a hazard for both the client and the researcher. It is well recognised that commitment by senior managers is critical to AR project completion (Wastell et al. 2004; Napier et al. 2011; Ngwenyama and Nørbjerg 2010). However, the client may not want to spend an indefinite amount of time on a single project, instead seeking earlier completion so as to enact changes that meet organizational needs.

Client team members may also lack commitment if they are not included within project design and planning activities (Beynon-Davies 2016), suggesting the need to involve client team members from an early stage in the AR project design. Researchers, on the other hand, may seek early closure to a project if they lose interest in the shifting theoretical or practical domain, seeing no end to a project that devours resources (Baskerville, 1999). This is a particularly difficult conundrum to resolve, since researchers are often subjected to various resource constraints and it may simply be impossible for them to persist with a project *ad infinitum*. For this reason, researchers need to communicate their resource constraints (in particular, time) to a client very early in the initial stages of a project.

We argue that researchers in particular have an ethical obligation to stick with the project until it is completed. This will involve a commitment that can stretch over several years. If this seems unduly onerous, recall that AR projects often involve teams of researchers. Therefore, although the team as a whole may be involved over an extended period of time, the actual membership of the team may vary. PhD students may join the team for a few years, as is the case with the HISP project, until they graduate and then move on (cf. Avison et al. 2018). Research assistants may also have contracts with limited timeframes.

Fortunately, individual research papers can be written and even published from a lengthy AR project well before it is completed (e.g. Vidgen and Braa 1997; Sandberg and Mathiassen 2008). The ethics of persistence are now captured by criteria 6g – see Table 1 below.

#### ***4.4 The Ethics of Consent***

Action Researchers communicate with and observe many different people at many different times, and even in many different settings. The data that an Action Researcher collects both explicitly and implicitly becomes part of his or her general knowledge base. Some of this knowledge will likely be used to support an assortment of inferences and interventions. The results of the inferences and interventions may subsequently be shared in published accounts of the AR as well as for teaching and consulting engagements. Thus, although it is standard practice for an AR project to be undertaken under the aegis of a Researcher-Client Agreement (RCA), which likely includes a Non Disclosure Agreement (NDA), it is unlikely that either of these agreements will cover all contingencies. Agreements may need to be revised or renegotiated if researcher or organizational circumstances change, but such revision may be ethically contentious since it may favour one party at the expense of the other, throwing existing plans or analyses into disarray.

A key component in any agreement will relate to the extent to which organizational members ‘consent’ to participate. Lincoln and Guba (1985) suggest that a client’s commitment to a project needs to be built on the notion that content is negotiated, and that this commitment is later either formalised explicitly in a written contract or informally communicated. Khanlou and Peter (2004), following basic principles of clinical research, contend that an action researcher should obtain informed consent from those participating in a project.

Conversely, Davison et al. (2004) argue in favour of affirmative consent: each individual should affirm his/her willingness to be involved. Affirmed consent is superior to



informed consent for two reasons: participants choose to participate; participants can opt out at any time. Beyond consent, Williamson & Prosser (2002) caution that there is a need to protect participants from harm, a key component of consequentialist ethics.

Managers are likely to participate in an AR project because they have been involved in its authorization and approval. The same is less likely to be true for non-managerial employees who are seldom involved in such activities. Indeed, in the absence of any formal consent mechanism, they may essentially be compelled to participate. This violates contemporary practice which ensures that employees are always free to withdraw from a study without consequence or penalty for themselves. These employees need to be assured of their anonymity (or pseudonymity), either by default or if they request it, since there are likely to be many potential conflicts between the employees, their managers and the researchers themselves (Walker & Haslett, 2002). The participants in Davison and Vogel's (2000) study indicated that they would refuse to participate in the absence of a guarantee that their contributions would be anonymous. Several scholars explain how they ensure that data gathered from participants is anonymous (e.g. Meissonier and Houz , 2010; Oates and Fitzgerald, 2007; Puhakainen and Sipponen, 2010), but anonymity is not always trusted by those it is supposed to protect (e.g. Barent et al., 1995; Davison and Martinsons, 2002).

Anonymity can also, paradoxically, be abused. As a result, researchers must exercise special care when deciding whether or not they wish to allow client team members to submit ideas anonymously. For instance, Davison and Vogel (2000) used a Group Support System to collect data from client team members: the CIO and representatives from different departments. They reported that the CIO freely admitted how he took advantage of the anonymity, contributing "large numbers of his own ideas without their authorship being positively attributable ... in order to see what he could get away with" (ibid., p. 12).

Although anonymity can therefore protect contributors who have “abnormal, unusual or unpopular” ideas (ibid., p.8), there may be other situations where the ethics are reversed and people wish to get credit for their ideas (e.g. Lyytinen et al., 1993), which is impossible if they are anonymous. For example, in an international meeting, participants may want to ensure that they and their nation are explicitly credited with a new idea or initiative. Similarly, within a client organization, different departments may have incentives to have their ideas or practices identified and accepted by others. Thus, while anonymity may prove valuable in some cases, it could also be counterproductive elsewhere and the action researcher must exercise considerable discretion in its application. The ethics of consent are now captured by criteria 6h, 6i and 6j – see Table 1 below.

## **5. Discussion**

Ethical issues must be considered when planning and conducting any research project. Those issues are even more important with AR projects due to the involvement of one or more researchers with a client organization. The potential for harm to the organization and its employees from an AR project is substantially greater than with other methods. We believe that there is an imperative to discuss ethical issues with research partners and clarify roles and responsibilities in the project. Action researchers take the initiative in confronting ethical issues and are prepared to modify or even abandon a project if there are issues that can not be resolved.

Regrettably, the ethical dilemmas encountered in action research and their resolution have seldom been reported in the literature and are often neglected in practice. We aim to stimulate candid discussion, thoughtful consideration and explicit reporting of the ethical issues that arise from AR projects.

Ethical values are undeniably personal and also subject to cultural differences. There is no universal agreement on many ethical issues. Previous studies have found significant

differences in the prevailing ethical values between countries (cf. Davison et al., 2009) and even within different generations within a single country (cf. Martinsons and Ma, 2009). Even formal ethical codes are found to be influenced by the national culture (Vitolla, 2021). Moreover, as Hilsen (2006) contends, it is through our practice that we ‘live our ethics’. Nevertheless, there is a universal need to follow ethical practices when planning, conducting and reporting research. This need is particularly acute given the nature of participation in AR projects.

Our primary motivation in writing this essay is to raise awareness among those who practice (or plan to practice) AR. We have considered the ethical dilemmas that they may face and the actions they may take to resolve those dilemmas. Our tone throughout this paper is generally normative. We have suggested that researchers should do something or need to think about something. This recognises the differences between cultures and the right of individual researchers to decide how they wish to act ethically. Nevertheless, we have specified four issues that warrant particularly careful attention: collaboration, competence, persistence, and consent. The practice of each of these presents opportunities for behaviour that has the potential to be labelled as unethical. Unethical behaviour can be a fatal flaw for an AR project. It can unleash significant damage on the client organization and result in the rejection of a submitted manuscript by an academic gatekeeper (journal editor) or peer reviewer.

### ***5.1 Principles for Action Research***

In this essay, we have been writing about AR in general terms. However, historically the canonical form of AR (CAR) has been most frequently practiced in IS (Avison et al., 2018). The form of AR that was later labelled as CAR was developed by Susman and Evered (1978). The label ‘canonical’ was used because this version of AR was asserted to have achieved the status of a canon or rule. Over the next 30 years, many different forms of AR

were developed (see Davison et al., 2021, for a historical overview), challenging the canonical status of CAR, yet the ‘canonical’ label was retained.

Over a number of papers, Davison and his colleagues (Davison et al., 2004, 2012, 2021; Davison and Martinsons, 2007; Wong and Davison, 2018) developed and applied five principles and associated criteria to prescribe how CAR could be conducted systematically and rigorously. They provided an overview of the practice of CAR (Davison et al., 2004), an exposition of the value of CAR for consultants (Davison and Martinsons, 2007), and a detailed treatment of the role of theory in CAR (Davison et al., 2012). Most recently (Davison et al., 2021) they amalgamated many of the different forms of AR into what they term Integrated AR (IAR). Thus, the practice of AR can now be guided by the five principles and a set of 47 criteria (see Appendix 1). These principles and criteria are formulated to be prescriptive and thus suggest behaviours that researchers are encouraged to consider and enact.

None of these principles and criteria for AR explicitly reference ethical concerns. Indeed, until now an extensive assessment of the ethical issues of AR has not been undertaken. Following from our discussion of the four issues of ethical issues in this article, we are able to suggest specific additions to the AR principles and criteria by Davison et al. (2004, 2012, 2021) that have been peer reviewed and published in our top-tier journals.

### ***5.2 A New Principle of Ethical Participation***

We propose a sixth principle of AR, ‘the principle of ethical participation’, as outlined in the analysis above and ten associated criteria. We illustrate how these criteria were applied in the entrance and pre-diagnostic stages of a specific IS AR project in Appendix 2. The new criteria, which are both formulated and numbered following the pattern used in the work of Davison et al. (2004, 2012, 2021), are listed in **Table 1**. The ten criteria are derived from the four issues of ethical focus, viz.: collaboration (C6a-C6d), competence (C6e and C6f),

persistence (C6g) and consent (C6h-C6j). The ten criteria also embody the consequentialist, deontological and virtue-based approaches that are recognised as more general principles of ethics.

**Table 1: Ten Criteria Associated with the Principle of Ethical Participation**

C6a	Researchers will consciously consider involving client team members throughout all the stages of the project.
C6b	Researchers will ensure that clients (especially the project champion) are aware of the academic dimension of the project.
C6c	Both researcher and client are responsible for communicating changes in circumstances that materially influence the project.
C6d	Researchers will accept the client's prerogative to attend to pressing needs that may interrupt a project.
C6e	Researchers will seek to develop competence in both AR as a method and the context of the client before they start the diagnosis.
C6f	Researchers will undertake to report how they developed competence in the formal write up of the project.
C6g	Researchers will persevere with a project until its completion or termination.
C6h	Researchers will ensure that all those involved in a project are informed about its objectives.
C6i	Researchers will ensure that all interactions with client team members are protected by a guarantee of anonymity (pseudonymity), unless an individual person explicitly affirms that such anonymity (pseudonymity) is not necessary.
C6j	Researchers will ensure that all client team members provide affirmative consent to participate in a AR project.

It has been suggested that as new technologies emerge, there will be a need for new ethical principles. It is our contention that this is not the case: we do not see a need for new principles of ethical participation. Even as information technologies advance and applications become more ubiquitous, the need to be ethical does not change; it is a constant. The ethical principle and associated criteria developed in this paper are expected to be generally valid for new technological developments as well as the contexts historically associated with AR.

Following Davison and Martinsons (2016), we suggest that AR is more likely to be associated with intensive and qualitative studies, involving small (not large) data sets. This places the focus on human beings and interpersonal interactions instead of modern information technologies. Nevertheless, prompted by a reviewer comment, we undertook a search for studies that employed AR to investigate such contemporary topics as Artificial Intelligence, Blockchain, Big Data, Data Science, and Machine Learning.

We were not able to locate any such studies in the 13 journals that we had previously searched systematically. However, we did find seven articles in a variety of other journals and conferences (Fricke, 2018; Kennedy et al., 2015; Lim et al., 2018; Lwakatare et al., 2021; Nzembayie et al., 2019; Sundarakani et al., 2021; Staron et al., 2020). None of these seven articles made any mention of ethical issues and in reading them we could not identify any ethical issues either. Naturally, this does not mean that the authors did not encounter ethical issues, but they definitely did not report them.

Nevertheless, we anticipate that ethical issues may arise in situations which involve Artificial Intelligence, Blockchain, Big Data, Data Science, and Machine Learning. For instance, digital data sets tend to be permanent. They can easily be transferred to others and then repurposed. This raises ethical issues, especially if the original data subjects are not consulted or do not give permission for their data to be reused for different purposes or in different ways. However, it is less likely that such a situation would occur in an AR study,

because researchers are expected to collect original data from research subjects (client team members and managers) rather than rely on third party or historical data sets. Nevertheless, the four ethical issues associated with AR participation that we have identified may not be exhaustive. We therefore recommend that action researchers engage with and thoughtfully consider ethical concerns. There are undoubtedly opportunities to fine-tune and perhaps augment the principle and criteria that we have formulated.

## **6. Conclusion**

Action research is comparatively less popular than many other research methods, based on numerical evidence from published accounts in scholarly journals and conferences (Avison et al. 2018). AR is also less likely to be promoted and taught in our doctoral programs than mainstream methods despite increasing calls for our research to be more practical and impactful (Davison and Bjørn-Andersen, 2019). We suggest that a key barrier to the teaching and undertaking of AR is a simple lack of knowledge.

We believe that a guiding set of principles and criteria for CAR, and more recently IAR (Davison et al., 2004, 2012, 2021), have collectively helped to formalise the method. However, the ethical issues of AR have hitherto been largely neglected. Therefore, in this essay we have engaged with the ethical considerations of AR participation. We first identified four issues that merit specific ethical attention when conducting AR: collaboration, competence, persistence, and consent. We suggest that each of these issues can be dealt with equitably and in a manner than benefits both the researcher and the organizational client.

The new principle of ethical participation and the ten associated criteria that we have formulated are designed to be mutually beneficial for those participating in AR. We expect that researchers will not only apply these criteria but also engage with them over time to suggest improvements. For instance, investigations involving new technologies may raise new ethical issues that require additional criteria or modifications of the existing ones.

Ethics is an emerging and continually developing area of practice. We personally strive to ensure that the ethical standards that we encourage are culturally and contextually appropriate. Achieving such broad understanding and application requires that the ethical principles and criteria be tested and evaluated in different contexts and cultures. The criteria should also help research ethics committees, which now commonly demand detailed information about how researchers plan to handle ethical issues that involve human subjects.

We believe that the additional AR principle and ten associated criteria that we have formulated, in combination with the arguments presented in this essay, will inform the planning, conduct and reporting of ethical AR practices. The application of this principle and the associated criteria will benefit action researchers, the organizations that serve as their clients, and the audience that reads their reports in academic journals and other publications.

## References

- Avison, D. E., Lau, F., Myers, M. D., & Nielsen, P. A. (1999). Action research, *Communications of the ACM*, 42(1), 94-97.
- Avison, D. E., Davison, R. M., & Malaurent, J. (2018). Information systems action research: Debunking myths and overcoming barriers, *Information & Management*, 55(2), 177-187.
- Barent, V., Krcmar, H., Lewe, H., & Schwabe, G. (1995). Improving continuous improvement with CATeam: Lessons from a longitudinal case study, In *Proceedings of the Twenty-Eighth Annual Hawaii International Conference on System Sciences* (Vol. 4, 200-209). IEEE.
- Baskerville, R. L., & Wood-Harper, A. T. (1996). A critical perspective on action research as a method for information systems research, *Journal of Information Technology*, 11(3), 235-246.
- Baskerville, R. L., & Wood-Harper, A. T. (1998). Diversity in information systems action research methods *European Journal of Information Systems*, 7(2), 90-107.



- Baskerville, R. L. (1999). Investigating information systems with action research, *Communications of the AIS*, 2(19), 1-31.
- Beynon-Davies, P. (2016). Instituting facts: Data structures and institutional order, *Information & Organization*, 26(1), 28-44.
- Bourgoin, A., & Harvey, J. F. (2018). How consultants project expertise and learn at the same time, *Harvard Business Review*. <https://hbr.org/2018/07/how-consultants-project-expertise-and-learn-at-the-same-time>
- Braa, J., Monteiro, E., & Sahay, S. (2004). Networks of action: Sustainable health information systems across developing countries, *MIS Quarterly*, 28(3), 337-362.
- Brydon-Miller, M., Greenwood, D. & Eikeland, O. (2006) Conclusion, *Action Research*, 4(1), 129-131.
- Chatterjee, S., Sarker, S., & Fuller, M. (2009). A deontological approach to designing ethical collaboration, *Journal of the AIS*, 10(3), 138-169.
- Chatterjee, S., & Sarker, S. (2014). Infusing ethical considerations in knowledge management scholarship: Toward a research agenda, *Journal of the AIS*, 14(8), 452-481.
- Chiasson, M., Germonprez, M., & Mathiassen, L. (2008). Pluralist action research: A review of the information systems literature, *Information Systems Journal*, 19(1), 31-54.
- Chughtai, H., & Myers, M. D. (2017). Entering the field in qualitative field research: A rite of passage into a complex practice world, *Information Systems Journal*, 27(6), 795-817.
- Cole, R., Purao, S., Rossi, M. & Sein, M. (2005). Being proactive: Where action research meets design science, *Proceedings of the 26<sup>th</sup> International Conference on Information Systems*, 27.
- Davison, R. M. & Martinsons, M.G. (2002). Empowerment or enslavement? A case of process-based organizational change in Hong Kong, *Information Technology & People*, 15(1), 42-59.

- Davison, R.M., Martinsons, M.G., & Kock, N. (2004). Principles of canonical action research, *Information Systems Journal*, 14(1), 65-86.
- Davison, R.M., Martinsons, M.G., Ou, C.X.J., Murata, K., Drummond, D.; Li, Y. & Lo, H.W.H. (2009) The ethics of IT professionals in Japan and China, *Journal of the Association for Information Systems*, 10 (11), Article 1.
- Davison, R.M. and Bjørn-Andersen, N. (2019) Do We Care About the Societal Impact of our Research? The Tyranny of the h-Index, *Information Systems Journal* 29, 5, 989-993.
- Davison, R. M., Martinsons, M. G., & Ou, C. X. J. (2012). The roles of theory in canonical action research, *MIS Quarterly*, 36 (3), 763-786.
- Davison, R.M. and Martinsons, M.G. (2016) Small data, smart analysis, big impact, *City Business Magazine*, Autumn, 42-47: <https://www.cb.cityu.edu.hk/CityBusinessMagazine/2016-autumn/en/small-data-smart-analysis-big-impact>.
- Davison, R.M. (2021) From ignorance to familiarity: Contextual knowledge and the field researcher, *Information Systems Journal*, 31(1), 1-6
- Davison, R.M., Martinsons, M.G. and Malaurent, J. (2021) Improving action research by integrating methods, *Journal of the AIS*, 22(3), 851-873.
- Davison, R.M., Ou, C.X.J. & Martinsons, M.G. (2013) Information technology to support informal knowledge sharing, *Information Systems Journal*, 23(1), 89-109.
- Davison, R. M., & Vogel, D. R. (2000). Group support systems in Hong Kong: An action research project, *Information Systems Journal*, 10(1), 3-20.
- Descola, P. (1996) *The spears of twilight (Les lances du crépuscule)*, The Free Press: New York.
- Dickens, L., & Watkins, K. (1999). Action research: Rethinking Lewin, *Management Learning*, 30(2), 127-140.

- Diener, E., & Crandall, R. (1978). Ethics in social and behavioral research. University of Chicago Press.
- Durcikova, A., Lee, A.S. & Brown, S. (2018). Making rigorous research relevant: Innovating statistical action research, *MIS Quarterly*, 42(1), 241-263.
- Eden, C. & Huxham, C. (1996). Action research for management research, *British Journal of Management*, 7(1), 75-86.
- Fricke, W. (2018) New challenges for action research, *International Journal of Action Research*, 2-3, 83-109.
- Ghoshal, S. (2005). Bad management theories are destroying good management practices, *Academy of Management Learning and Education*, 4(1), 75-91.
- Greenwood, D. (2002). Action research: Unfulfilled promises and unmet challenges. *Concepts and Transformation*, 7(2), 117-139.
- Hatzakis, T., Lycett, M. & Serrano, A. (2007). A programme management approach for ensuring curriculum competence in IS (higher) education, *European Journal of Information Systems*, 16(5), 643-657.
- Hedstrom, K. (2007). The values of IT in elderly care, *IT and People*, 20(1), 72-84.
- Heidegger, M. (2011). *The Concept of Time*, London: Continuum.
- Hilsen, A.I. (2006). And they shall be known by their deeds: Ethics and politics in action research, *Action Research*, 4(1), 23-36.
- Hult, M. & Lennung, S.-A. (1980). Towards a definition of action research: A note and bibliography, *The Journal of Management Studies*, 17(2), 241-250.
- Kemmis, S. & McTaggart, R. (1988) *The Action Research Planner*. Victoria, Australia: Deakin University.

- Kennedy, H., Moss, G., Birchall, C. & Moshonas, S. (2015) Balancing the potential and problems of digital methods through action research: methodological reflections, *Information Communication & Society*, 18, 2, 172-186.
- Keynes, J. M. (1936). *The General Theory of Employment, Interest and Money*, London: Macmillan.
- Khanlou, N., & Peter, E. (2004). Participatory action research: Considerations for ethical review, *Social Science & Medicine*, 60(10), 2333-2340.
- Kock, N., & McQueen, R. (2004). A field study of the effects of asynchronous groupware support on process improvement groups, *Journal of Information Technology*, 12(4), 245-259.
- Kohler, T., Fueller, J., Matzler, K., & Stieger, D. (2011). Co-creation in virtual worlds: The design of the user experience, *MIS Quarterly*, 35(3), 773-788.
- Kohli, R., & Kettinger, W. J. (2004). Informating the clan: Controlling physicians' costs and outcomes, *MIS Quarterly*, 28(3), 363-394.
- Israel, M. & Hay, M (2006) *Research ethics for social scientists*, Sage, London.
- Landy, H. (2020). A \$7 trillion wall street powerhouse is finally matching its climate-change rhetoric with action. Retrieved from <https://qz.com/1784949/blackrock-ceo-larry-finks-2020-letter-backs-up-climate-rhetoric-with-action/>
- Lewin, K. (1945). The research center for group dynamics at Massachusetts Institute of Technology, *Sociometry*, 8(2), 126-136.
- Lim, C.Y., Kim, M.J., Kim, K.H., Kim, J.K. & Maglio, P.P. (2018) Using data to advance science: managerial issues and theoretical implications from action research, *Journal of Service Theory and Practice*, 28(1), 99-128.
- Lincoln, Y.S., & Guba, E.G. (1985). *Naturalistic Inquiry*. Sage Publications, Beverly Hills, CA.

- Locke, T., Alcorn, N., & O'Neill, J. (2013). Ethical issues in collaborative action research, *Educational Action Research*, 21(1), 107-123.
- Lwakatare, L.E., Range, E., Crnkovic, I. & Bosch, J. (2021) On the experiences of adopting automated data validation in an industrial machine learning project, *43<sup>rd</sup> International Conference on Software Engineering*, May 23-29, Madrid.
- Lyytinen, K., Maaranen, P., & Knuuttila, J. (1993). Unusual business or business as usual: An investigation of meeting support requirements in multilateral diplomacy, *Accounting, Management and Information Technology*, (3), 97-117.
- Martensson, P. & Lee, A.S. (2004). Dialogical action research at Omega corporation, *MIS Quarterly*, 28(3), 507-536.
- Martinsons, M.G., Davison, R.M., & Huang, Q. (2017). Strategic knowledge management failures in small professional service firms in China, *International Journal of Information Management*, 37(4), 327-338.
- Martinsons, M.G. & Ma, D. (2009) Sub-cultural differences in information ethics across China: Focus on Chinese management generation gaps, *Journal of the Association for Information Systems*, 10(11), Article 2.
- McKay, J., & Marshall, P. (2001). The dual imperatives of action research, *Information Technology & People*, 14(1), 46-59.
- Meissonier, R., & Houzé, E. (2010). Toward an 'IT conflict-resistance theory': Action research during IT pre-implementation, *European Journal of Information Systems*, 19(5), 540-561.
- Mingers, J., & Walsham, G. (2010). Toward ethical information systems: The contribution of discourse ethics, *MIS Quarterly*, 34(4), 833-854.
- Morton, A. (1999). Ethics in action research, *Systemic Practice and Action Research*, 12(2), 219-222.

- Mumford, E. (2001). Advice for an action researcher, *Information Technology & People*, 14(1), 12-27.
- Myers, M.D. & Venable, J.R. (2014). A set of ethical principles for design science research in information systems, *Information & Management*, 51(6), 801-809.
- Napier, N. P., Mathiassen, L., & Robey, D. (2011). Building contextual ambidexterity in a software company to improve firm-level coordination, *European Journal of Information Systems*, 20(6), 674-690.
- Ngwenyama, O., & Nørbjerg, J. (2010). Software process improvement with weak management support: An analysis of the dynamics of intra-organizational alliances in IS change initiatives, *European Journal of Information Systems*, 19(3), 303-319.
- Nzembayie, K.F., Buckley, A.P. & Cooney, T. (2019) Researching pure digital entrepreneurship: A multimethod insider action research approach, *Journal of Business Venturing Insights*, 11, e00103, 1-10.
- Oates, B. J., & Fitzgerald, B. (2007). Multi-metaphor method: Organizational metaphors in information systems development, *Information Systems Journal*, 17(4), 421-449.
- Olesen, K., & Myers, M. D. (1999). Trying to improve communication and collaboration with information technology: An action research project which failed, *Information Technology and People*, 12(4), 317-332.
- Orlikowski, W. (1996). Improvising organizational transformation over time: A situated change perspective, *Information Systems Research*, 7(1), 63-92.
- Puhakainen, P., & Siponen, M. (2010). Improving employees' compliance through information systems security training: An action research study, *MIS Quarterly*, 34(4), 757-778.

- Quast, L. (2017). Why you should stop trying to “fake it till you make it”, *Forbes*  
<https://www.forbes.com/sites/lisaquast/2017/08/14/why-you-should-stop-trying-to-fake-it-till-you-make-it/>
- Rapoport, R. N. (1970). Three dilemmas in action research with special reference to the Tavistock experience, *Human Relations*, 23(6), 499-513.
- Sahay, S., Sæbø, J., & Braa, J. (2013). A scaling of HIS in a global context: Same, same, but different, *Information and Organization*, 23(4), 294-323.
- Salmela, H. (2008). Analysing business losses caused by information systems risk: A business process analysis approach, *Journal of Information Technology*, 23(3), 185-202.
- Sandberg, B. A., & Mathiassen, L. (2008). Managing slowdown in improvement projects, *IEEE Software*, 25(6), 84-89.
- Schein E. (1987). *The clinical perspective in fieldwork*. Newbury Park: Sage.
- Shah, H., Eardley, A., & Wood-Harper, T. (2007a). ALTAR: Achieving learning through action research, *European Journal of Information Systems*, 16(6), 761-770.
- Shah, H., Eardley, A., & Wood-Harper, T. (2007b). ALTAR in action: Knowledge management, *European Journal of Information Systems*, 16(6), 771-779.
- Staron, M., Ochodek, M., Meding, W. & Soder, O. (2020) Using machine learning to identify code fragments for manual review, *46<sup>th</sup> Euromicro Conference on Software Engineering and Advanced Applications*, 26-28 August, Kranj, Slovenia.
- Street, C. T., & Meister, D. B. (2004). Small business growth and internal transparency: The role of information systems, *MIS Quarterly*, 28(3), 473-506.
- Sundarakani, B., Ajaykumar, A. & Gunasekaran, A. (2021) Big data driven supply chain design and applications for blockchain: An action research using case study approach, *Omega*, 102, 102452, 1-19.

- Susman, G. L., & Evered, R. D. (1978). An assessment of the scientific merits of action research, *Administrative Science Quarterly*, 23(4), 582-603.
- Thompson, M. P. A. (2002). Cultivating meaning: Interpretive fine-tuning of a South African health information system, *Information & Organization*, 12(2), 183-211.
- Vidgen, R., & Braa, K. (1997). Balancing interpretation and intervention in information systems research: The action case approach, In: Lee A. S., Liebenau J., and DeGross J. I. (Eds) *Information Systems and Qualitative Research*. The International Federation for Information Processing. Boston, MA: Springer.
- Vitolla, F., Raimo, N., Rugbino, M., & Garegnani, G.M. (2021) Do cultural differences impact ethical issues? Exploring the relationship between national culture and quality of code of ethics, *Journal of International Management*, 27(1), 100823.
- Vroom, V. H., & Jago, A. G. (2007). The role of the situation in leadership. *American Psychologist*, 62(1), 17-24.
- Walker, B., & Haslett, T. (2002). Action research in management: Ethical dilemmas, *Systemic Practice and Action Research*, 15(6), 523–533.
- Walton, R. E., & Warwick, D. P. (1973). The ethics of organization development, *Journal of Applied Behavioral Science*, 9(5), 681-698.
- Wastell, D., Kawalek, P., Langmead-Jones, P., & Ormerod, R. (2004). Information systems and partnership in multi-agency networks: An action research project in crime reduction, *Information & Organization*, 14(3), 189-210.
- Williamson, G. R., & Prosser, S. (2002). Action research: Politics, ethics and participation, *Journal of Advanced Nursing*, 40(5), 587-593.
- Wong, L. H. M., & Davison, R. M. (2018). Knowledge sharing in a global logistics provider: An action research project, *Information & Management*, 55(5), 547-557.



Young, B. W., Mathiassen, L., & Davidson, E. (2016). Inconsistent and incongruent frames during IT-enabled change: An action research study into sales process innovation, *Journal of the AIS*, 17(7), 495-520.

## **APPENDIX 1: Principles and Criteria for Integrated Action Research**

Davison et al. (2004) developed a set of five principles and 31 criteria for the assessment of Canonical Action Research. This was supplemented in Davison et al. (2012) with 12 additional and revised criteria. In 2021, Davison et al. published a further update with what is now named 'Integrated Action Research' (IAR). The five principles and 47 criteria for IAR are listed below. A sixth principle and 10 criteria that address ethical issues that are augmented by this paper are appended at the end of the list.

### **P1: The principle of the researcher-client agreement**

- C1a Both the researchers and the client agree that IAR is the appropriate approach for the organizational situation.
- C1c The client has made an explicit commitment to the project.
- C1b The researchers and the client jointly specify the focus of the AR project clearly and explicitly.
- C1e The project objectives and evaluation measures are specified explicitly.
- C1d The roles and responsibilities of the researchers and client organization members are specified explicitly.
- C1f The data collection and analysis methods are specified explicitly.

### **P2: The principle of the cyclical process model**

- C2a The researchers plan to follow the cyclical process model and justify any deviation from it.
- C2b The researchers will ensure that they have sufficient skills and confidence prior to engaging with the clients in the diagnostic stage.
- C2c The researchers will immerse themselves into the world of the client prior to and during the project.
- C2d The researchers will have rich conversations with the clients during the diagnostic stage in order to understand the problem context.
- C2e The researchers plan to conduct an independent diagnosis of the organizational situation.
- C2f The researchers will ensure that they plan their actions explicitly based on the results of their independent diagnosis.
- C2g The researchers will implement and evaluate the planned actions.

- C2h The researchers will reflect on the outcomes of the intervention.
- C2i Following this reflection, the researchers will make an explicit decision on whether or not to proceed through an additional process cycle.
- C2j Both the exit of the researchers and the conclusion of the project will be due to either the project objectives being met or some other clearly articulated justification.
- C2k The researchers will consciously adhere to the ethical principle of non-maleficence at all stages of the project.

**P3: The principle of theory**

- C3a The project activities will be guided by a theory or set of theories.
- C3b The domain of investigation is theoretically relevant to the scholarly interests of the research community.
- C3c The researchers will select and apply one or more instrumental theories for the independent diagnosis as they seek to derive the causes of the observed problems.
- C3d The researchers will consider developing conceptual models as a form of instrumental theory to help in the problem diagnosis.
- C3e The researchers will identify a focal theory during the problem diagnosis.
- C3f The researchers and clients will agree on the appropriateness of the instrumental and focal theories for the organizational context and practices.
- C3g The researchers will consider how combining data from different sources could strengthen both their action-based intervention and their subsequent contribution to knowledge.
- C3h The planned intervention will be premised on the focal theory and will address the problems diagnosed.
- C3i The researchers will consider if relationships between the variables from the problem diagnosis and the planned changes could be tested statistically so as to triangulate their findings more rigorously.
- C3j The focal theory will be used to evaluate the outcomes of the intervention.
- C3k The researchers will evaluate and reflect upon theoretical explanations for the current organizational problem situation.
- C3l The researchers will reflect on the focal theory used and its ability to predict the change outcomes.
- C3m The researchers will consider how theory can be inductively developed from the IAR project.

**P4: The principle of change through action**

- C4a Both the researcher and client are motivated to improve the situation.
- C4b The problem and its cause(s) will be specified as a result of the diagnosis.

- C4c The planned actions will be designed to address the diagnosed cause(s).
- C4d The researchers will consider how IT artifacts could accompany the planned actions.
- C4e The client will approve the planned actions before they are implemented.
- C4f The organizational situation will be assessed comprehensively both before *and* after the intervention.
- C4g The researchers will conform with their professional responsibility to ensure that their planned actions are sustainable in the organizational context.
- C4h The timing and nature of the actions taken will be clearly and comprehensively documented.
- C4i The researchers will follow up with the client at a suitable time after project completion to assess continued progress.

**P5: The principle of learning through reflection**

- C5a The researcher will provide progress reports to the client and organizational members.
- C5b Both the researcher and the client will reflect upon the outcomes of the project.
- C5c The researchers will report their activities and outcomes to the client clearly and comprehensively.
- C5d The researchers will consider the project results in terms of implications for further action in this situation.
- C5e The researchers will consider the project results in terms of implications for action to be taken in related research domains.
- C5f The researchers will reflect on the results in terms of implications for the research community (general knowledge, informing/re-informing theory).
- C5g The researchers will reflect on the results in terms of the general applicability of IAR.
- C5h The researchers will consciously reflect on how well their intervention balanced research and action.

**P6: The principle of ethical participation (*New*)**

- C6a Researchers will consciously consider involving client team members throughout all the stages of the project.
- C6b Researchers will ensure that clients (especially the project champion) are aware of the academic dimension of the project.
- C6c Both researchers and clients are responsible for communicating changes in circumstances that materially influence the project.
- C6d Researchers will accept the client's prerogative to attend to pressing needs that may interrupt a project.

- C6e Researchers will seek to develop competence in both AR as a method and the context of the client before they start the diagnosis.
- C6f Researchers will undertake to report how they developed competence central to the domain of investigation in the formal write up of the project.
- C6g Researchers will persevere with a project until its completion or termination.
- C6h Researchers will ensure that all those involved in a project are informed about its objectives.
- C6i Researchers will ensure that all interactions with client team members are protected by a guarantee of anonymity (pseudonymity), unless an individual person explicitly affirms that such anonymity (pseudonymity) is not necessary.
- C6j Researchers will ensure that all client team members provide affirmative consent to participate in an AR project.

**APPENDIX 2: Example of Applying Principle 6 in the Entrance and Pre-Diagnostic Stages of an AR Project**

<p>General Entrance Issues</p> <ul style="list-style-type: none"> <li>• Discussion with potential collaborating organization to explore area of mutual interest in pursuing collaboration on an AR project.</li> <li>• Seek high level management agreement to proceed</li> <li>• Prepare and sign non-disclosure agreement (NDA) or contract if necessary</li> </ul>	
<b>Project Specific Entrance Activities</b>	<b>IAR Principle 6's Criteria Applied</b>
<ul style="list-style-type: none"> <li>• An initial meeting was set up with senior HR director, who was our first point of contact. The objective of this initial meeting was to explore the possibility of collaborating. In retrospect, I realized that it was more important to establish a good first impression and initial trust using this initial meeting. Otherwise, the initial meeting might become the final one. I treated it just like a job interview but in a more conversational form. The outcome of the initial meeting was positive in that the senior HR director identified a few possible areas of collaboration and agreed to arrange a second meeting with another contact in the organization.</li> </ul>	C6a, C6b, C6h
<ul style="list-style-type: none"> <li>• Following the initial meeting, we drafted a research proposal based on the information exchanged in the initial meeting. The proposal which included a proposed project scope, research background, objectives, and researcher profiles was used to seek management approval on the project.</li> </ul>	C6a, C6b, C6h
<ul style="list-style-type: none"> <li>• I suggested the client to use the research proposal as a basis for the process of preparing an NDA.</li> </ul>	C6i

<ul style="list-style-type: none"> <li>The second meeting was conducted with a senior manager a few weeks after the initial meeting to narrow down the focus and the business functions involved in the project. The senior manager also became the formal focal contact within the firm for the project.</li> </ul>	C6a, C6b, C6d
<ul style="list-style-type: none"> <li>I learnt a lot in the second meeting where the senior manager clearly explained their business priorities and challenges. At the same time, I was aware that I had to learn more about the organization before I could proceed with the project.</li> </ul>	C6h
<ul style="list-style-type: none"> <li>At this point, we had to wait for the management approval and the NDA to proceed to the diagnosis stage. However, this did not stop us from doing preparatory work in the pre-diagnostic stage.</li> </ul>	C6i
<b>General Pre-Diagnostic Stage Issues</b> <ul style="list-style-type: none"> <li>Ensure researcher's ethical obligation to prepare or learn the necessary contextual information about the collaborating organization before the diagnosis stage.</li> <li>Ensure collaboration organization's ethical obligation to provide required information or resources to support the researcher before any engagement with field level employees.</li> </ul>	
<b>Project Specific Pre-diagnostic Stage Activities</b>	<b>IAR Principle 6's Criteria Applied</b>
<ul style="list-style-type: none"> <li>I undertook industry research to acquire a basic understanding of the courier express delivery industry landscape, practices, and common pain points.</li> </ul>	C6e
<ul style="list-style-type: none"> <li>I undertook organization background research specific to the focal firm including competitive analysis and work culture.</li> </ul>	C6e
<ul style="list-style-type: none"> <li>I also had multiple emails and telephone conversations with the senior manager to clarify my understanding and line up necessary resources and meetings.</li> </ul>	C6e
<ul style="list-style-type: none"> <li>The firm was also kind enough to provide us with a couple of seminars about the background and operations overview of the involved business functions. Besides gaining the knowledge of their operations during the seminars, I had learnt many of their internal jargons and language of the trade which I later found to be extremely useful in communicating with the field employees.</li> </ul>	C6e
<ul style="list-style-type: none"> <li>During these seminars, I also took the opportunity to brief them on our research focus, the CAR methodology, and the theories we intended to use in the project.</li> </ul>	C6b

<ul style="list-style-type: none"> <li>• While we were still waiting for the NDA approval, the firm started to establish an internal core project team including members of the particular business functions. A briefing meeting was conducted to ensure all project team members understand the objectives of the project.</li> </ul>	C6a, C6h
<ul style="list-style-type: none"> <li>• I also developed and discussed multiple project engagement plans with the senior manager by evaluating the effectiveness of different plans and anticipating alignment with business schedules.</li> </ul>	C6a, C6c, C6d
<ul style="list-style-type: none"> <li>• The senior manager also helped align resources (internal funding, people, and facilities) within the organization prior to the diagnostic stage, including issues of anonymity and consent.</li> </ul>	C6i, C6j

## BIOS

Robert Davison is a Professor of Information Systems at the City University of Hong Kong. His research focuses on the use and misuse of information systems, especially with respect to problem solving, guanxi formation and knowledge management, in Chinese organisations. He is particularly known for his scholarship in the domain of action research. He has published over 200 articles in a variety of journals. Within the AIS, Robert chaired the research ethics committee for many years. Robert currently chairs the IFIP WG 9.4 (The Implications of Information and Digital Technologies for Development) and is the Editor-in-Chief of the *Information Systems Journal* and the *Electronic Journal of Information Systems in Developing Countries*. As a researcher and as an editor, he seeks to promote both an inclusive and an indigenous perspective to research. Home Page: <http://www.is.cityu.edu.hk/staff/isrobert>

Maris Martinsons is a professor of management currently associated with the City University of Hong Kong, the Stockholm School of Economics and the University of Toronto. He completed both his Engineering and MBA degrees at the University of Toronto, and his PhD at the University of Warwick. Professor Martinsons is a leading authority on strategic management, organizational change, and knowledge management/information systems. His research and insights have been published in more than 100 peer-reviewed journal articles and 10 different languages. Maris was a member of the committee that established the Association for Information Systems in 1994. He has also made significant contributions since the 1990s to develop and internationalize the Academy of Management. Maris has extensive experience as a consultant, advising business and government leaders while mentoring many businesspeople, researchers, teachers, and students. He has successfully completed more than 30 large-scale consulting projects in Western, Chinese and cross-cultural settings.

Louie Wong is a Professor at NUCB Business School, Nagoya University of Commerce and Business, Japan. He is an active researcher and educator with extensive teaching, research, and industry experience. Louie's research interests include management information systems, digital transformation, social media, knowledge management, supply chain management, information security, and action research. Besides, Louie is also a seasoned business executive with decades of industry experience in the Asia Pacific. Louie received his Ph.D.

degree in Information Systems from City University of Hong Kong. He also holds an MBA degree, a Bachelor and a Master of Science degrees in Computer Science.