

AUSTRALIAN ICT PROFESSIONALS' PERCEPTIONS REGARDING WHAT HELPS THEM IDENTIFY ETHICAL PROBLEMS AND SOLVE THEM: A MIXED METHOD APPROACH

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Abstract

First, the study employed a quantitative survey to find out Australian ICT professionals views regarding what helps them identify ethical problems in the workplace and solve them. The survey questionnaire was administered using SurveyMonkey.com and was completed by a total of 2,315 participants. To understand how Australian ICT professionals feel about certain strategies for identifying ethical problems in the workplace and solving them, a principal component analysis with varimax rotation was used to extract interpretable factors. The analysis extracted two factors: internal strategies and external strategies. Both factors had an eigenvalue greater than 1.0. (internal strategies, 2.238; external strategies, 1.610). The two factors accounted for 76.96% of the total variance in each of the variables. Second, the survey was followed by a set of semi-structured in-depth interviews with 43 participants selected from those who responded to the Phase 1 quantitative survey. Surprisingly, the findings from the quantitative survey were consistent with the findings from the qualitative interviews. The findings from both approaches suggest that Australian ICT professionals found internal strategies more effective in dealing with ethical workplace issues compared to external strategies.

1 Introduction

The literature indicates that information and communication technology (ICT) professionals lack awareness when it comes to recognising ethical problems (see for example Al-Saggaf & Burmeister (2012); Sherratt, Rogerson & Fairweather (2005) and Jung (2009) whose research findings reported the existence of this problem). Pliagas (2000, p. 40), provided an example of this lack of awareness when she noted that the Y2K bug is a classic lesson in the lack of ethical awareness among ICT professionals because developers thought little about future implications of their work and the importance of proper software testing.

Scholars suggest several strategies for improving awareness about ICT ethical issues including effective ICT ethics education (Johnson, 2010; Fleischmann, 2010; and Lucas & Bown, 2007); industry training (Cappel and Windsor, 1998) and adopting codes of ethics (Van den Bergh & Deschoolmeester, 2010; Burmeister & Weckert, 2003; Bown, Burmeister, Gotterbarn, & Weckert; 2006). Many universities around the world have already changed their ICT courses to include ethics subjects, and almost all the pivotal ICT organisations require an ethics component within qualifications deemed acceptable for membership. In addition, most ICT organisations have implemented

codes of ethics, however, the notion of a common European code of ethics, like that of a common international code (Burmeister, 2013), is not considered realistic due to cultural differences (Sherry, et al., 2012). A study by McLaughlin, et al. (2011) found that about 70% of European ICT professionals have 'signed up' to a code of ethics, and about 90% reported that they are useful. In Australia, only about 8% of ICT professionals (out of about 250,000) have 'signed up' to the Australian Computer Society (ACS) code of ethics suggesting more needs to be done to promote ICT professionalism in Australia.

The present study, supported by the ACS and the Australian Research Council, employed a quantitative survey to find out Australia ICT professionals perceptions regarding what helps them identify ethical problems in the workplace and solve them. The survey was then followed by a set of semi-structured in-depth interviews with 43 participants in six Australian capital cities selected from those who responded to the Phase 1 quantitative survey. The next sections detail the methods and findings of this mixed method study.

2 The quantitative survey

2.1 Survey procedure

To answer the research questions, the study employed a survey questionnaire administered using SurveyMonkey.com, to allow the participants to fill the questionnaire and return it over the internet. The survey was informed by the results of a previous survey conducted by Lucas and Mason (2008) and also by the instrument they used.

All active ACS members (approximately 18,600) were invited to participate in the web-based survey by direct email sent to them by the ACS once on 12 September 2013. The survey was closed on 6 November after the response rate reached 12.4%. The online questionnaire was prefaced by the ethics consent sheet (including assurances of anonymity) and a description of the study. The questions comprised both closed ended and open ended questions.

2.2 Sample

A total of 2,315 participants completed the questionnaire. Out of the 2,315 respondents who participated in the study 84.5% (N=1940) were males, and 15.5% (N=356) were females. By age, 30% (N= 692) of the respondents indicated that they were under 35 years; 22.3% (N=516) indicated that their age fell between 36 and 45 years; 25% (N=576) said their age fell between 46 and 55 years; and 22.7% (N= 524) indicated that they were 56 years and above. According to the survey results, 33.8% (N=698) of the participants in the study described their occupational category as manager, 14.8% (N=307) said they were developers; 24.3% (N=502) indicated they were consultants and 13.3% (N=277) said they worked in technical support.

2.3 The scale

To understand how Australian ICT professionals feel about certain strategies for identifying ethical problems in the workplace and solving them, a scale that comprised nine statements was used. The statements covered codes of ethics, personal ethics, company policies, company culture, ethics committees, mission, value statements, ethics education, industry licensing and industry standards. The nine statements were

prefaced by the statement ‘please indicate your feeling about the following statements’. Respondents were asked to indicate their feeling using a 6-point Likert-type scale (Strongly Agree, Agree, Neither agree nor disagree, Disagree, Strongly Disagree and Not applicable).

2.4 Statistical analysis

A principal component analysis with varimax rotation was used to extract interpretable factors. The analysis was carried out using IBM SPSS Statistics Version 20 and was repeated 9 times to satisfy the requirements of this analysis. Upon inspection of the results the following requirements were met:

1. The sample size was 2,315.
2. The correlations matrix for the variables included many correlations greater than 0.30.
3. All variables had a measure of sampling adequacy greater than 0.50 (as the Anti-image Correlation table revealed).
4. The variables with measures of sampling adequacy less than 0.50 were removed (as the Anti-image Correlation table revealed).
5. All the variables had a communality greater than 0.50.
6. The variables that had a communality less than 0.50 were removed.
7. The overall measure of sampling adequacy for all the variables was greater than 0.50 (see Kaiser-Meyer-Olkin (KMO) value below).
8. The overall KMO Measure of Sampling Adequacy was 0.713.
9. The probability associated with the Bartlett Test of Sphericity was less than 0.001.
10. The derived components explained more than 60% of the variance in each of the variables.
11. There was no complex structure so as to extract clean variables that correlated highly within each factor.
12. None of the components had only one variable in it.

A scree plot initially produced three factors. However, after the analysis was repeated 9 times, a scree plot produced only two factors which were extracted in the final analysis. The final analysis yielded a reduced scale of five items that loaded on these two factors.

2.5 Findings (Quantitative survey)

The two extracted factors were: internal strategies and external strategies. Both factors had an eigenvalue greater than 1.0. (internal strategies, 2.238; external strategies, 1.610). The two factors accounted for 76.96% of the total variance in each of the variables. All the statements had factor loadings of more than .7, indicating that the variables are highly correlated within their factors. Table 1 below shows the results of the factor analysis.

Table 1. The results of the factor analysis

Rotated Component Matrix ^a		
	Component	
	Internal	External

My company policies help me in identifying the ethical problems and solving them.	.889	.116
My company's culture helps me in identifying the ethical problems and solving them.	.898	.060
My company's mission/ value statement helps me in identifying the ethical problems and solving them.	.774	.297
My industry licences or certification help me in identifying the ethical problems and solving them.	.123	.874
The industry standard I am adopting, such as CoBIT and ITIL, helps me in identifying the ethical problems and solving them.	.161	.861

The first factor, internal strategies, accounted for 44.755% of the variance after rotation. It consisted of the following statements:

1. My company policies help me in identifying the ethical problems and solving them.
2. My company's culture helps me in identifying the ethical problems and solving them.
3. My company's mission/ value statement helps me in identifying the ethical problems and solving them.

The second factor, external strategies, accounted for 32.204% of the variance after rotation. It consisted of the following statements:

1. My industry licences or certification help me in identifying the ethical problems and solving them.
2. The industry standard I am adopting, such as CoBIT and ITIL, helps me in identifying the ethical problems and solving them.

3 The qualitative interviews

3.1 Conducting the interviews and analysing the data

The survey was followed by a set of semi-structured in-depth interviews with 43 participants selected from those who responded to the Phase 1 quantitative survey. The interviews were conducted during the month of February 2014 and took place in six Australian capital cities. The purpose of these follow-up semi-structured in-depth interviews is to allow for the reporting of participants' perceptions in regards to the

nature of the ethical problems experienced in the ICT workplace and how exactly these problems are often solved.

Purposive sampling was adopted to select the participants from those who had indicated a willingness to be interviewed. Purposive sampling allowed the researchers to choose cases that were representative of all sub-groups and personal characteristics which might be of interest to the study (Al-Saggaf, 2012). The sample drawn included professionals from a range of ICT organisations, both large and small, representing different geographic locations, ages, gender, types of jobs, and employment experience. All the interviews were tape recorded and transcribed verbatim.

The transcribed interviews were analysed using thematic (qualitative) analyses. Data analysis was completed with the help of QSR NVivo 10, a software package for managing qualitative data. The unit of analysis was each individual interview document. Data analysis proceeded as follows. First, the interview documents were read several times so the researchers could familiarize themselves with the data collected. Next, free nodes (i.e. nodes not organized or grouped) were created based on keywords in the interview documents. Similar text within the interview documents was located and assigned to these nodes. These nodes then acted as 'buckets' in the sense that they held all the data related to a specific node. At the end of the creation of the free nodes these free nodes were further divided into tree nodes. That is, broader categories were developed to group the free nodes. This was to create a hierarchy that made it easy to make sense of the data and facilitate interpretation.

3.2 Findings (qualitative interviews)

Interestingly, the findings from the qualitative interviews were consistent with the findings from the quantitative survey particularly with regards to two important aspects. First, the findings from the qualitative interviews show that internal strategies for helping ICT professionals identify ethical problems in the workplace and solve them are more effective than external strategies. Second, the findings from the qualitative interviews show that within the internal strategies category, company's policies and company's culture are the two major strategies for ensuring ethical behaviour in the workplace.

On the other hand, the findings from the qualitative interviews uncovered an additional internal strategy for dealing with unprofessional practice that the quantitative survey did not identify because it did not ask participants about it. This additional internal strategy is auditing. The next section presents the results of the analysis of the data from the qualitative interviews relating to these three internal strategies for dealing with unprofessional practice, namely company's policies, company's culture and auditing. The reason for the focus on only these three is because (1) the analysis of the interviews revealed they are the most important ones. (2) The analysis of the remaining interviews (17 in addition to the 26 included in the analysis) has not been completed yet.

3.2.1 Company policies

When asked for their views about effective strategies for dealing with unprofessional behaviour, a good group of interviewees said they found the organisation's policies to be most effective. However, according to them, having policies written and stored

somewhere is not enough. Interviewee 10 (44, Female, Adelaide) said they need to enjoy “a high level of visibility” adding:

I know certainly at say for instance the Working Women’s Centre as part of the ICT ethics there we’ve developed a policy on ethics and then if they tender any work out to individuals then we put that with the contract etc so that people have got that level of visibility.

In addition to marrying policies with contracts, Interviewee 10 also suggested linking policies with the staff salary payments:

Well it has to come from the owners ... when it’s been staff that have been behaving unethically you write policies and procedures and make it part of their – if you want to get your pay you have to have done this, this and this – to embed that kind of culture in staff

But to make the policies more effective, Interviewee 12 (41-45, Male, Adelaide) went as far as suggesting staff should sign the policies:

don’t just send the policy out, make them sign the policy,...have something that says by signing this you acknowledge that you have read the aforementioned document and you understand what it means.

A number of interviewees also spoke about the importance of the role of management in making the policies more effective. Interviewee 23 (55, Male, Melbourne) said first you have to communicate the policies to staff and explain how these policies could apply to them, then the management team has to reinforce these policies in their actions.

Three interviewees concurred with this view. The interview transcripts of Interviewee 11 (37, Female, Adelaide), Interviewee 25 (31, Male, Melbourne) and Interviewee 3 (49, Female, Perth) included the following keywords: “enforcement from the top”, “not just paying lip service”, “following through with them [policies]” and “enact them” [policies]. The following quotation from Interviewee 23 (55, Male, Melbourne) sums up these views:

The policies can state the behaviors desired but then that has to be lived by the management and I think I’ve got a great manager who does that.

On the other hand, Interviewee 3 highlighted the problems created by management when they don’t stand by the organisation’s policies:

If for instance with a simple case of a student cheating, we have perfectly good policies and procedures to cope with that, but because the teachers have no faith in employing them because they’ve tried to and been let down by managers that have said, “No you can’t do that.” Then the students learn, that okay, I can cheat and still get away with it.

As can be seen from Interviewee 3 above quotation, not enforcing the organisation’s policies can encourage unethical behaviour and so Interviewee 3 suggested that management should support the policies regardless of the discomfort that doing that may bring about:

...if, the Managers that had the policies said to their staff, "We are supporting this and we are doing it," and then followed through and modelled it, despite complaints

She went on to highlight the issue of the uneven application of policies, explaining why this uneven application of policies is problematic:

having organisations that stood by their policies and procedures would be a really good thing, because that, that's, it's so insidious that people learn that they're supposed to say one thing but do another. That, once, once that has become part of your working life well then, you completely undermined ethics.

Company policies can be an effective mechanism in promoting professionalism in the ICT workplace but they need to be communicated to staff effectively, enforced evenly by management and lived by them.

3.2.2 Company culture

A number of interviewees found the organisation's culture to be effective in dealing with unprofessional behaviour in the ICT workplace. On the importance of culture, Interviewee 25 (31, Male, Melbourne), for example, argued:

the culture of a workplace makes a big difference. If you're in an organisation, let's say you were in a casino where the intent of the casino is clearly to take money of people as quickly as they can and as much as they can. Then I think the moral behaviour of the people in that organisation is more inclined to, it may be a bit of a grey area because we're just keen on getting money off someone. Whereas being in a government organisation the focus is very much on providing service to the public, and so that's where you can, from a moral point of view you can actually look at, is this in the best interests of what we're trying to do as an organisation?

Interviewee 13 (67, Male, Brisbane) agrees with Interviewee 25 but points out that fostering an ethical culture in the workplace is not an easy task:

Culture is really, really important in the organisation. And culture's a hard animal to get a hold of, very hard animal to get a hold of. But, so a lot of work goes into that.

Can regulations and industry standards foster an ethical culture in an organisation? The two interviewees, who commented on this point, had different views about it. The first one (Interviewee 6 (72, Female, Perth)), thought that a quality management system and certification by an industry standard will have a great impact on the culture at work:

I believe they can be resolved by following a quality management system and having certification with international Australian standards which are audited so that's an ongoing thing - that certification.

The second (Interviewee 10 (44, Female, Adelaide)), thought that following an industry standard does not mean the culture of the organisation is ethical:

Well it's a regulation, it's not a workplace culture so you might have a regulation over here but you're culture is very far removed from that.

Perhaps companies should be strict about unethical behaviour as one company did:

In the eighties and nineties [a three letter company] had a very, very strong culture and if you broke any of the clear guidelines, the business rules, you would be walked out the door, and I saw it happen (Interviewee 22 (55, Male, Melbourne)).

Interviewee 22 also shared the story of an Australian Bank where the culture was also strict:

They also introduced with equal weight, a set of behaviours, and they had the people's behaviour assessed by their subordinates, their peers and their superiors, and they would equally weight it. So, if you got a 1 – top score over here – but you got a D over here, which was the lowest score, you basically got no bonus because not only do they want you to do well, they wanted you to behave well, which was things like not being difficult to get on with, promoting the culture.

To Interviewee 13 (67, Male, Brisbane) one of the useful strategies for creating an ethical culture within an organisation involves engaging staff in development programs:

we've run several programs to embed those values in processes and performance measures and encouraging people to help each other to demonstrate those values.

Interviewee 13 gave an example of how this strategy works:

One of the things that we've done a lot of work to do to foster in the organisation is a culture of cooperation and information sharing. So you don't get any kudos for being the single go-to guy about anything. You get kudos for sharing that information and assisting your colleagues to become competent.

To Interviewee 25 (31, Male, Melbourne), on the other hand, the culture of an organisation is a reflection of the behaviour and attitude of its upper management:

I think it gets driven from the top. So if you've got a leader who, so a Chief Executive who acts like that, who then, the directors follow that because he's acting in that way, they all follow in that same way. Then you have the managers who also act because the CEO's demonstrates in a behaviour, the directors are, the managers are, and then because the manager is the staff also believe that that's the way.

For this reason Interviewee 25's development programs target their leaders:

... actually we are doing a development program for the leaders. So a lot of that at the moment is happening, is about how do you really embed the organisational culture in a way you do your day to day working? And some really small things about just the way you talk to your staff and you address them or you deal with problems, or you talk to other staff across the organisation. And that's, it's a long process of getting that up

Fostering an ethical culture in the workplace can be difficult but possible if the people at top model ethical behaviours and attitudes in the workplace, and strictly in enforce high ethical standards. Regulations, industry standards and staff development programs can also have a positive effect on fostering an ethical culture within an organisation.

3.2.3 Auditing

Another theme that transpired from the analysis of the interviews is the role auditing plays in ensuring ICT employees are doing the right thing. The survey did not ask the study participants about auditing (i.e. it was not one of the nine scale statements). This is because the survey was influenced by an earlier survey conducted in 2006 and the recent literature in this area and both of these did not point out to auditing as strategy for dealing with unprofessional behaviour. During the interviews, however, participants brought up auditing as a strategy. Interviewee 1 (54, Male, Perth) for example said:

The best way to deal with it is and the only affective way to deal with it is independent audit. So when I was consulting a lot on my own if I found problems I would call in a group audit cause that's what group audit's job is and I can call in group audit... So sometimes the way forward as a consultant is to go can you just come and have a look at all of this and they come in, a good group audit will come in and they will open everything out.

Interviewee 6 (72, Female, Perth) highlighted the importance of doing audits on top of industry certifications and standards:

I believe they [ethical problems] can be resolved by following a quality management system and having certification with international Australian standards which are audited so that's an ongoing thing – that certification.

The Interviewee 6 comment, above, suggests it is not enough for an organisation to follow industry certifications and standards. It needs to be followed by regular audits. Interviewee 6 explains why this should be the case:

it's good that if you certificated you get audited by the Standards Australia auditing because you can have it on paper but not follow it.

Interviewee 2 (69, Male, Perth) brought up the issue of evidence arguing if ICT professionals know they will be audited they will keep evidence of all the activities they complete:

If you complete all the project management after facts, there was like schedules, risk management plan, a risk register, if you complete all those things then they can be, yes, then they can be audited. So there's evidence there that someone's doing their job and doing it properly.

Interviewee 4 (50, Male, Perth) believes that the act of keeping evidence is in itself useful because it can minimise the opportunity for wrong doing. His comment "If you've got proper documentation then there could be very little [room], as I can see, for foul play or deceiving" illustrates this point. But Interviewee 3 (49, Female, Perth) notes that there could be problems with the attitude of always having to document evidence in case of an audit and shares an example from her own personal experience to highlight this problem:

I can remember being frustrated by responding to audit requests with information and basically being run around in circles and all the questions ceased once a

Manager had signed off, I was appropriate for the role. So it's like, we have these structures to check on things, but people within those structures if they can find someone else to take the – basically this particular person's signature meant that that person would then be at fault if I was found incapable in the job.

Interviewee 3's comment above highlights also the issue of paying lip service to audits, that is as long as the evidence shows that everything is 'OK' then everything is perceived to be 'OK'. For this reason independent audits can be more effective as Interviewee 1 (54, Male, Perth) explains:

and then the nice thing about group audit and the reason that that is a separation of function is that they're independent. So they can come in, they can find the problem, they can address the problem and nobody is – it's I'm not snitching on anyone, I'm not having to ... it takes all that away.

As can be seen from this last quotation, independent audits can be effective because they can overcome the problem of conflict of interest as the auditors are usually from outside the organisation and their aim is not punish people; rather to fix problems.

Audits can be an effective strategy for dealing with unprofessional behaviour in the ICT workplace providing they are conducted by independent auditors, management are not paying lip service to them and are done on top of industry certifications and standards.

4 Conclusion

The finding that Australian ICT professionals find internal strategies more useful in dealing with ethical workplace issues compared to external strategies was thus a major theme of both the surveys and the subsequent interviews, but the interviews also permitted an additional theme to emerge. The 2013 survey followed the format and questions of an earlier survey conducted in 2006 and supplemented by questions arising from the 2006 findings and related literature. But in the interviews participants were able to articulate other choices.

The present study is ongoing with the next step being the derivation of strategies that have been successfully employed in industry to deal with ethical challenges. Then, in the latter half of 2014, focus groups will be held in capital cities, involving ACS Fellows and others with extensive ICT experience, to refine those strategies. The fourth phase is to hold evaluation meetings in capital cities. Thereafter the final step in this project (in the first half of 2015) will be to create a website that is available through the ACS, but not restricted to members, which will resource ICT professionals to better deal with various ethical challenges as they arise.

The final website design has yet to be decided. For instance, work to date on this project suggests that one size does not fit all. That is, whereas the survey suggests that there are certain challenges that dominate, the interviews suggest that different areas of ICT employment would prioritise those challenges differently. Someone working as a contractor for the public service would not list the order of challenges in the same way as a network administrator, or as a help desk operator. Therefore the site might need to have a tailoring ability that will allow people to quickly drill down to the types of strategies that best serve to overcome the ethical challenges most prevalent to their work function.

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