ACIS 2004 Proceedings   Australasian (ACIS)

December 2004

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Abstract

User participation and involvement have long been associated with system success. This paper reports on a study to investigate the role of involvement in user developed application success. The study explored the chain of influences between involvement and the different forms of information systems success and clarified how these influences differ for participants and non-participants in the development process.

Keywords

Participation, involvement, user satisfaction, end user computing, end user development

INTRODUCTION

Systems that are important and relevant to users are described as involving. Users who feel a sense of involvement with a system: use the system more (Barki & Hartwick, 1991; Hartwick & Barki, 1994), have more positive attitudes to it (Jackson, Chow, & Leitch, 1997), perceive it to be more useful (Seddon & Kiew, 1994), and are more satisfied with it (Blili, Raymond, & Rivard, 1998). Involvement is therefore strongly associated with information systems (IS) success. One way to achieve user involvement in a system is through user participation in system development (Hartwick & Barki, 1994). User participation influences application success by increasing system use (Baroudi, Olson, & Ives, 1986), increasing perceptions of the usefulness of the system (Franz & Robey, 1986) and its positive impact on work (Torkzadeh & Doll, 1999), and improving satisfaction with the information obtained from the system (Hawk, 1993) and user satisfaction with the system as a whole (Lawrence & Low, 1993).

Although both participation and involvement influence application success, we know little about the mechanisms by which their influence operates. While participation is presented as a precursor to involvement in much of the user involvement literature, there has been little study of involvement among users who have not participated in system development. Furthermore, although DeLone and McLean (1992; 2003) proposed a sequential relationship between IS success measures, there has been little research on the chain of influences between involvement and the different forms of IS success. Seddon and Kiew (1994) included involvement in their validation of DeLone and McLean's initial model, but did not include it in their respecification of the model (Seddon, 1997). As a step toward better understanding the role of involvement in IS success, the research described in this paper examined the relationship between involvement and several indicators of system success, comparing the nature of the relationship for users who have participated in development of a system and those who have not.

The research was conducted in the domain of end user developed applications (UDAs) – systems that are developed by people who are not trained information technology (IT) professionals to support their own work or that of their colleagues. Cavaye's (1995) review of the user participation literature noted that most research on participation has been in the context of traditional data processing environments and called for a broader

approach including investigation of its role in end user development. User involvement is likely to be of particular importance in the UDA domain as the user is often solely responsible for development.

BACKGROUND

Prior to 1989, the terms *user involvement* and *user participation* were used interchangeably. Barki and Hartwick drew attention to the difference between the concepts and defined user participation as 'a set of behaviors and activities performed by users in the systems development process' (Barki & Hartwick, 1989 p.53) and involvement as 'a subjective psychological state, reflecting the importance and personal relevance of a system to the user' (Barki & Hartwick, 1989 p.53). These definitions have been adopted for the study described in this paper.

The results of early research on the role of involvement were mixed. Ives and Olsen (1984) found a positive impact of involvement on user satisfaction, system usage or system quality in only around half of the studies that they reviewed. Similarly, Cavaye's (1995) review of research in the subsequent 10 years found a positive relationship between involvement and system success in only 37% of studies. The inconclusive results have been attributed to difficulties in definition, primarily lack of distinction between participation and psychological involvement (Cavaye, 1995; Ives & Olson, 1984) associated with problems of measurement (Baroudi et al., 1986). These observations suggest that participation and involvement may affect IS success in different ways.Table 1 provides a summary of research that supports the positive role of user participation and involvement in IS success. The table identifies whether the independent variable (described as involvement in the original research) more closely approximates a measure of the degree of participation in a system development project (*participation*) or a subjective psychological state (*involvement*).

Table 1: Summary of research showing positive outcomes associated with user participation and involvement

Dependent Variable Measured	Participation/ Involvement	Study
Information satisfaction	Participation	Baroudi, Olsen and Ives (1986); Hawk(1993)
User satisfaction	Participation	Doll and Torkzadeh (1989; 1991); Lawrence and Low (1993); Amoako-Gyampah and White (1993); McKeen, Guimaraes and Wetherbe (1994); McKeen and Guimaraes (1997); Torkzadeh and Doll (1999); Torkzadeh and Lee (2003)
	Involvement	Blili, Raymond and Rivard (1998)
System usage	Participation	Baroudi, Olsen and Ives (1986)
	Involvement	Barki and Hartwick (1991); Hartwick and Barki (1994)
Perceived system usefulness	Participation	Franz and Robey (1986)
	Involvement	Seddon and Kiew (1994)
Attitude towards system	Involvement	Jackson, Chow and Leitch (1997)
Perceived impact on work	Participation	Torkzadeh and Doll (1999)

The positive impact of participation on user satisfaction has been well established (e.g. Amoako-Gyampah & White, 1993; Doll & Torkzadeh, 1989, 1991; Lawrence & Low, 1993; McKeen & Guimaraes, 1997; McKeen et al., 1994; Torkzadeh & Doll, 1999; Torkzadeh & Lee, 2003), while there is less research demonstrating the influence of participation and involvement on other measures of IS success.

The relationship between IS success measures has been described, in general terms, by DeLone and McLean (1992), and investigated for UDAs in several studies by McGill (McGill, Hobbs, & Klobas, 2003; McGill & Klobas, in press). Much as Barki and Hartwick (1989) distinguished between the observable action of participation and the cognition of involvement, McGill and colleagues have distinguished between independently rated measures of system quality and impact on work, and the user's perceptual system, which includes perceived system quality and perceived individual impact. They have found that user satisfaction plays a pivotal role, mediating between user perceptions of system quality and impact on the individual user's work.

RESEARCH MODEL

The research model proposed in this paper is an extension of the work of McGill and colleagues. We propose that participation and involvement are precursors to IS success measures such as user satisfaction and individual impact. The system of relationships studied in this research appears in Figure 1. Its derivation is discussed in more detail in this section.
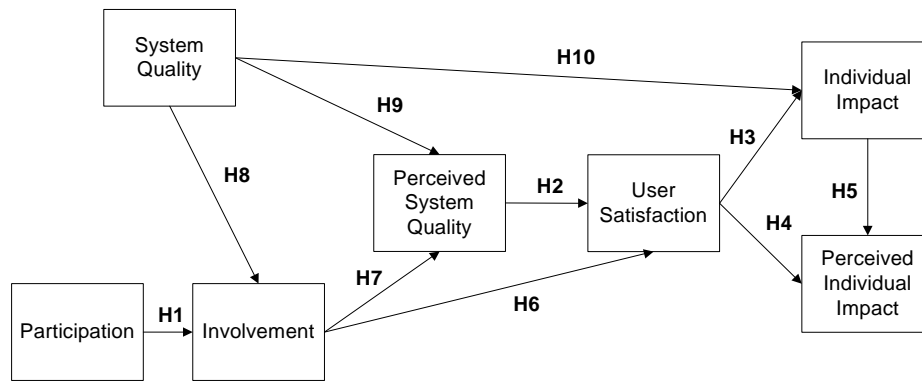
Figure 1: Proposed relationships between participation, involvement and information system success

Effect of Participation

Despite recognizing the importance of both participation and involvement in IS success, Jackson, Chow and Leitch (1997) did not propose a direct relationship between them. Lin and Shao (2000) proposed a relationship, but did not find one. Nevertheless, user participation in the development of organizational systems has been shown in some studies to lead to increases in user involvement with the completed system (Barki & Hartwick, 1991; Hartwick & Barki, 1994; Hunton & Beeler, 1997). It was thus hypothesized that the equivalent relationship would exist in the UDA domain:

H1:   Participation positively influences involvement.

Through this effect, and the relationships hypothesized in H2 to H7 below, participation was therefore hypothesized to influence all the aspects of IS success included in the model. We therefore expected different levels for the various success measures, as well as for involvement, for user developers and users who are not the developer of the application they use.

UDA Success Factors

Following McGill et al. (2003) and McGill and Klobas (in press), we hypothesized that:

H2:   User satisfaction reflects perceived system quality.
H3:   Individual impact reflects user satisfaction.
H4:   Perceived individual impact reflects user satisfaction.

In the model tested in the study described in this paper, 'actual' individual impact is further conceptualized as an antecedent to perceived individual impact, so that an end user's perception of impact is formed in part by objective evidence of the system's impact, as well as being influenced by user satisfaction. It was therefore also hypothesized that:

H5:   Perceived individual impact reflects individual impact.

Effects of Involvement

As shown in Table 1, the literature on user involvement indicates that increased involvement is associated with increased user satisfaction. Despite Seddon and Kiew's (1996) assertion that perceived system quality is unlikely to be influenced by involvement, we proposed that increased satisfaction is partially mediated through increased levels of perceived system quality. A user's judgment might be clouded by their close involvement with both the application and the application development process itself. That is, increased levels of involvement with a UDA may lead to increased perceptions of the quality of that application in addition to the direct affect on user satisfaction reported in the literature. It was thus hypothesized that:

H6:   Involvement positively influences user satisfaction.
H7:   Involvement positively influences perceived system quality.

Through these effects, and the relationships among UDA success factors hypothesized in H2 to H5, involvement was therefore hypothesized to influence all the measured aspects of IS success.

Role of System Quality

Barki and Hartwick (1991) proposed that the quality of an information system influences the level of psychological involvement of users with the completed system. Consistent with this, it was hypothesized that:

H8:   Involvement reflects system quality.

Although concerns have been expressed about the ability of end users to assess system quality (e.g. Kreie, Cronan, Pendley, & Renwick, 2000; Shayo, Guthrie, & Igbaria, 1999), in this study it was hypothesized that:

H9:   Perceived system quality reflects system quality.

Because observed individual impact is likely to reflect actual system quality (Hubona & Cheney, 1994) as well as the perceptual system that extends from involvement, the proposed system of relationships was completed by the addition of:

H10:   Individual impact reflects system quality.

METHOD

End users both develop and use their own applications and use applications developed by other end users. In this study, end users developed spreadsheet applications using Microsoft Excel. The IS success of each application was evaluated twice, once by its end user developer (a *participant* in the system development), and once by an end user who had not participated in development of the system (a *non-participant* in the system development). This approach enabled the IS success outcomes of participants and non-participants in development of the same IS to be compared. It also provided two sets of data for examination of the hypothesized relationships between involvement, system quality, and IS success; the hypothesized relationships were tested twice, once for participants and once for non-participants. By using the same spreadsheets for participant and non-participant evaluations, the potential effect of differences in the overall quality of the spreadsheets was eliminated; for example, observed differences in perceived system quality reflected differences between participation and non-participation in development rather than inherent differences between the sets of spreadsheets as may have been the case if two different sets of spreadsheets had been used.

Subjects

The sample was drawn from spreadsheet users of varying degrees of experience and proficiency. We will call the study participants 'users' rather than 'participants' in this article, in order to avoid confusion between the participants in the study and the roles that they played as participants or non-participants in the development process.

Recruitment occurred firstly through advertisements placed in local Australian newspapers calling for volunteers, these were followed by e-mails to three large organizations that had expressed interest in the study and finally word of mouth brought forth some additional participants. Whilst being essentially a convenience sample, they covered a broad spectrum of ages, spreadsheet experience and training. Of the 159 users, 32.7% were male and 67.3% female and their ages ranged from 14 to 77 with an average age of 42.7. They reported an average of 4.5 years experience using spreadsheets (with a range from less than 1 year to 21 years).

Procedure

Fourteen experimental sessions of approximately four hours were held. Each session was conducted in three stages. In Stage 1, the users were asked to complete a questionnaire to provide demographic information about themselves and information about their background with spreadsheets. The questionnaire also tested their knowledge of spreadsheets. In Stage 2, the users were given a problem statement and asked to develop a spreadsheet to solve it. The problem related to making choices between car rental companies.

Once all the users had completed their spreadsheet, Stage 3 began. The task for this stage was to use two spreadsheets, one developed by the user and the other developed by another user, to answer 10 questions related to making choices about car rental hire. Each user was given a floppy disk containing the two spreadsheets to use and evaluate. The spreadsheets were matched on the basis of the spreadsheet knowledge (scores from Part 1) of the user developers, in the expectation that users with a similar level of spreadsheet knowledge would develop spreadsheets of similar sophistication. To control for presentation order effects, each user was randomly assigned to use either their own or the other spreadsheet first. The users answered the car hire questions using the first spreadsheet. Once finished they completed a questionnaire containing items to measure: perceived system quality, involvement, user satisfaction and perceived individual impact. The answers to the questions were collected along with the completed questionnaire. Each user then repeated the process with the second spreadsheet. A different but equivalent set of car rental decision questions was used.

Instruments

This section describes the measurement of each construct.

Involvement

The involvement construct was operationalized using Barki and Hartwick's (1991) instrument which addresses both the perceived importance and personal relevance of a system. The resulting scale is a seven point bi-polar semantic differential scale with 11 items.

System Quality and Perceived System Quality

In this study, end user perceptions of system quality were considered to be a separate construct from system quality as assessed by independent experts. The items used to measure both system quality and perceived system quality were derived from the instrument developed by Rivard et al. (1997) to assess the quality of UDAs. The resulting system quality scale consisted of 20 items, each scored on a Likert scale of 1 to 7 where (1) was labeled 'strongly agree' and (7) was labeled 'strongly disagree'. In addition to the users' assessments of system quality (perceived system quality), the system quality of each application was evaluated by two independent assessors using the same set of items. Both assessors were IS academics with substantial experience teaching spreadsheet design and development. The two final sets of independent assessments were highly correlated (r = 0.80, *p* < 0.001); averages of the ratings for each item were used in the analysis.

User Satisfaction

Seddon and Yip's (1992) four item 7 point semantic differential scale for user satisfaction was used in this study. A typical item on this scale is 'How effective is the system?' measured from (1) 'effective' to (7) 'ineffective'.

Individual Impact

Individual impact was measured as accuracy of decision making (number of questions correct). Two sets of ten questions involving the comparison of costs of car rental companies under a variety of scenarios were created. The second set of questions was derived by altering the figures in the first set, but keeping the form of the questions the same. The questions ranged from comparison of the three firms when no excess kilometre charges are imposed through to questions where excesses are applied and basic parameters are assumed to have changed from those given in the original problem description. The questions were piloted by four end users and slight changes made to clarify them. The equivalence of the two sets of questions in terms of difficulty and time to complete was confirmed during piloting of the task by measuring the time taken to answer each set and the number of answers correct.

Perceived Individual Impact

Perceived individual impact was measured using two items derived from Goodhue and Thompson (1995). These items were measured on a 7 point Likert scale ranging from (1) 'agree' to (7) 'disagree'.

Spreadsheet Knowledge

The instrument used to measure spreadsheet knowledge was based upon an instrument used by McGill and Dixon (2001). The final instrument contained 25 items. Each item was presented as a multiple choice question with five options. In each case the fifth option was 'I don't know' or 'I am not familiar with this feature'.

Data Analysis

The relationships in the model were tested using structural equation modeling (SEM). Maximum likelihood estimates of the measurement and structural models were made using Amos 4. Goodness of fit was measured for both measurement models and structural models by the likelihood ratio chi-square (χ^2), ratio of χ^2 to degrees of freedom (χ^2/df), the goodness of fit index (GFI), the root mean square error of approximation (RMSEA), the Tucker-Lewis index (TLI), and the adjusted goodness of fit index (AGI).

In this study measurement models were developed separately before structural model estimation occurred. Three estimates of reliability were also calculated for each of the constructs: Cronbach's alpha coefficient, composite reliability, and average variance extracted. The three measures of reliability were all acceptable for each scale and the majority of guidelines for goodness of fit for the measurement models were also met (Hair, Anderson, Tatham, & Black, 1998). The measurement models were therefore considered acceptable for use.

Measurement models can provide composite values of latent variables for inclusion in structural models. Using composite variables has been shown to reduce random error and enable more stable and reliable estimates of model constructs (Landis, Beal, & Tesluk, 2000). Composite variables were using the factor score weights reported by Amos 4. The loading of each composite variable on its associated latent variable and the error associated with using the composite variable to represent the latent variable were estimated as described by Hair et al. (1998).

Once the measurement models were established, the hypothesized structural model was estimated. Analysis of the participant and non-participant datasets was undertaken separately. Three criteria were used to test structural model quality: goodness of fit, the ability of the model to explain the variance in the dependent variables, and the statistical significance of estimated model coefficients.

RESULTS

Scores for all variables in the study are presented and compared in Table 2. The comparisons are based on paired *t*-tests, where the tested difference is the difference between scores for the same user acting as an end-user developer (development participant) and as an end-user of a system developed by another person (development non-participant). The mean scores obtained for the systems when developed by participants in the development were significantly higher than the scores obtained when the systems were evaluated by non-participants in the development, both for involvement and for all the IS success measures.

The Effect of Participation

Table 2 shows that end users who had participated in the development of the applications they used were significantly more involved with them than with applications that they had not developed. Hypothesis H1 was therefore supported. Because there was a difference between scores on all the IS success measures included in the model, it appears that the effect of participation may flow, through involvement, to IS success. However, because system quality also influences the IS success measures, estimation and interpretation of the structural models was required before that conclusion could be drawn.

Table 2: Development participant and non-participant scores on all variables

Variable		Mean	SD	*t*	*df*	*p*
Involvement	Participant	9.37	2.72	4.93	156	<0.001
	Non-participant	8.18	3.19			
System quality	Participant & non-participant	3.97	1.15	n.a.[a]	n.a.	n.a.
Perceived system quality	Participant	4.62	1.28	4.21	156	<0.001
	Non-participant	4.00	1.48			
User satisfaction	Participant	4.43	1.86	3.43	156	0.001
	Non-participant	3.65	2.07			
Individual impact	Participant	4.39	3.33	3.08	156	0.002
	Non-participant	3.49	3.22			
Perceived individual impact	Participant	9.38	3.94	4.35	156	<0.001
	Non-participant	7.26	4.30			

[a] Not applicable - because the same set of spreadsheets were used in each condition

Structural Models

Having confirmed that there are differences in users' scores in the two conditions, subsequent analyses examined the hypothesized structural model (Figure 1) under each condition. The results of the structural model estimations are presented graphically in Figure 2 (participation in development) and Figure 3 (non-participation in development), which show standardized coefficients and estimates of the variance in each IS success factor explained by the model. Table 3 reports the raw model coefficients with their statistical significance, as well as model goodness of fit for both conditions.
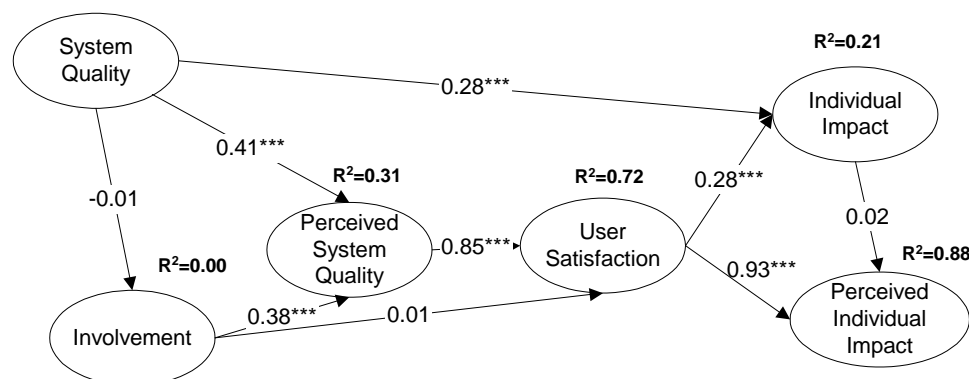

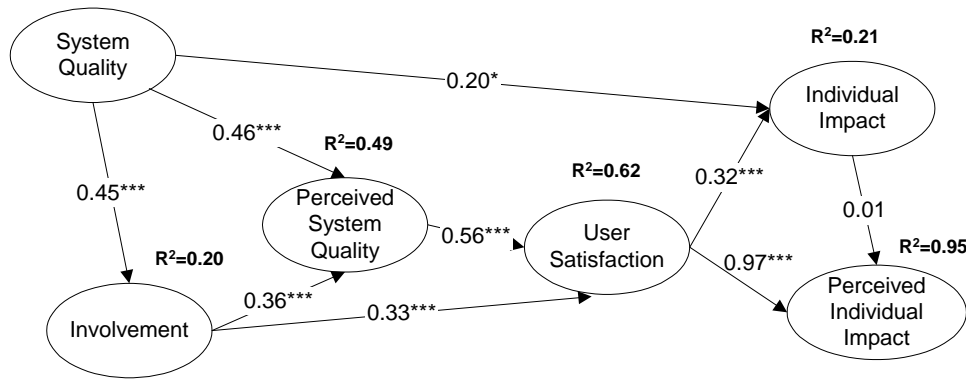Figure 2: Structural equation model, participation in development

Figure 3: Structural equation model, non-participation in development

There was a good fit between model and data for the non-participation in development condition. The goodness of fit measures provided conflicting information, however, for the participation in development condition: GFI, AGFI and TLI were good, but χ^2/df was just above the recommended level and RMSEA was higher than recommended. In terms of fit, the proposed model of the influence of participation and involvement on IS success was more satisfactory for non-participants in development than for participants.

Table 3: Structural equation model statistics

Path		Participants			Non-participants		
From	To	Estimate	Standard error	t value	Estimate	Standard error	t value
System quality	Perceived system quality	0.415	0.076	5.45***	0.535	0.087	6.15***
System quality	Involvement	-0.009	0.086	-0.10	0.515	0.091	5.68***
Involvement	Perceived system quality	0.379	0.074	5.12***	0.353	0.072	4.88***
Involvement	User satisfaction	0.012	0.055	0.22	0.310	0.063	4.94***
Perceived system quality	User satisfaction	0.851	0.053	16.03***	0.534	0.065	8.25***
User satisfaction	Individual impact	0.943	0.261	3.61***	0.924	0.247	3.75***
User satisfaction	Perceived indiv. impact	1.768	0.078	22.69***	1.807	0.060	29.93***
Individual impact	Perceived indiv. impact	0.014	0.022	0.67	0.008	0.019	0.44
System quality	Individual impact	0.934	0.272	3.44***	0.637	0.281	2.27*
Goodness of fit measures							
χ^2, df, p		30.58, 10, 0.001			4.71, 10, 0.910		
χ^2/df		3.058			0.471		
GFI		0.950			0.992		
AGFI		0.860			0.976		
RMSEA		0.114			0.000		
TLI		0.945			1.011		

*$p < 0.05$, *** $p < 0.001$*

In both conditions, a high proportion of variance in user satisfaction was explained by the model, 72% when users participated in development and 62% when they did not. The model also explained perceived individual impact well, explaining 88% of the variance when users participated in development and 95% of the variance when they did not. It was less successful in explaining individual impact, explaining 21% of individual impact under both conditions. Perceived system quality was moderately well explained, with 31% of perceived system quality being explained in the development participation condition and 49% in the non-participation condition.

The differences in model fit and variance explained in the two conditions are mirrored by differences in the significance of the paths in the model. The results of the individual hypotheses for participants and non-participants are summarised in Table 4. The hypothesized path from individual impact to perceived individual

impact was not supported under either condition. Users' perceptions of individual impact cannot be said to reflect the actual impact. While the proposed model was otherwise supported for the non-participants, two paths associated with involvement were not supported for the participants. The mechanisms associated with involvement were different for participants and non-participants in the development process.

Table 4: Summary of hypothesis testing

Hypothesis	Participants	Non-participants	Implications for the model
1. Participation positively influences involvement.	-	-	Supported
2. User satisfaction reflects perceived system quality.	Supported	Supported	Supported
3. Individual impact reflects user satisfaction.	Supported	Supported	Supported
4. Perceived individual impact reflects user satisfaction.	Supported	Supported	Supported
5. Perceived individual impact reflects individual impact.	*Not* supported	*Not* supported	*Not* supported
6. Involvement positively influences user satisfaction.	*Not* supported	Supported	Supported only for *non-participants*
7. Involvement positively influences perceived system quality.	Supported	Supported	Supported
8. Involvement reflects system quality.	*Not* supported	Supported	Supported only for *non-participants*
9. Perceived system quality reflects system quality.	Supported	Supported	Supported
10. Individual impact reflects system quality.	Supported	Supported	Supported

Table 5 reports standardized total (direct plus indirect) effects for the proposed model under each condition. It shows the total effects of both involvement and system quality on each of the IS success variables. The effect of involvement on IS success varied across the IS success measures. When the user of an application also participated in its development, involvement had a moderately strong effect on perceived system quality, user satisfaction and perceived individual impact, but little effect on individual impact. Involvement also played an important role when the user of an application had not participated in its development; it had a strong effect on user satisfaction and perceived individual impact, a moderately strong effect on perceived system quality, and a relatively weak effect on individual impact. We can therefore conclude that participation, acting through involvement, affected IS success in different ways. Involvement that arose from participation rather than system quality (i.e. the involvement of users who had participated in the development process) had a moderate influence on perceived system quality, user satisfaction, and perceived individual impact. Involvement that arose from system quality rather than from participation in the development process (i.e. the involvement of the non-participant users) had a moderate influence on perceived system quality, a moderately strong influence on user satisfaction and perceived individual impact, and a weak but perceptible impact on individual impact. Although there were quite marked variations in the effect of involvement, system quality had a moderately to strong effect on all IS success factors under both conditions.

Table 5: Standardized total effects of involvement and system quality

	Participants		Non-participants	
	System quality	Involvement	System quality	Involvement
Perceived system quality	0.411*	0.378**	0.624**	0.355**
User satisfaction	0.348*	0.333**	0.494**	0.525*
Individual impact	0.378*	0.094**	0.360**	0.168*
Perceived individual impact	0.333*	0.312*	0.482*	0.510*

* $p < 0.05$; ** $p < 0.01$

DISCUSSION

Although both participation and involvement influence application success, little was previously known about the mechanisms by which their influence operates. The research described in this paper has made a major contribution to the understanding of the role of involvement in IS success. It has explored the chain of influences between involvement and the different forms of IS success and clarified how these influences differ for participants and non-participants in the development process.

UDA Success Factors

With the exception of the proposed relationship between individual impact and perceived individual impact, the observed relationships among the UDA success factors were as hypothesized. The lack of direct relationship between individual impact and perceived individual impact may highlight the role of feedback. Whilst users in the study were aware if their application was unable to provide an answer to a question, they did not receive

formal feedback on the accuracy of their decisions. In this artificial situation, participants may not have had sufficient awareness of the quality of their decision making for individual impact and perceived individual impact to be directly related. Presumably, in the workplace end users have higher levels of feedback than that provided in this study. However, organizations should be mindful of the need for this feedback, and try to provide for it in task design.

Effect of Participation

Participation had a strong influence on UDA success. End users evaluated the applications that they had developed as being of higher system quality; they were more satisfied with their use of the systems; they evaluated the individual impact more highly; and they performed better (as measured by actual individual impact) when using them. Participation also had a significant influence on involvement in the end user developed application domain. End users who had participated in the development of the applications they used were significantly more involved with them than with applications that they had not developed. This result is consistent with previous research on the participation of users in organizational systems development (Barki & Hartwick, 1991; Hartwick & Barki, 1994; Hunton & Beeler, 1997).

Effects of Involvement

Studying the effects of involvement separately from those of participation identified a more complex set of relationships than suggested by observations of participation alone. For user developers, involvement affects perceived system quality directly, but it only indirectly affects user satisfaction, perceived individual impact, and (weakly) individual impact. On the other hand, if the user has not been involved in the development of the application (i.e. there is no participation effect), involvement also has a significant direct effect on user satisfaction. These results are consistent with Jackson, Chow and Leitch's (1997) claim that relationships between, and effects of, participation and involvement may not be as simple as suggested in the literature. They argue that there is a need to separate the psychological and participative aspects of user involvement because they affect user satisfaction differently. As there has been little study to date on the mechanisms by which participation and involvement influence IS success, and no previous investigation of the role of perceived system quality, it is not possible to tell if earlier reported relationships between involvement and user satisfaction (Blili et al., 1998) or user attitude towards a system (Jackson et al., 1997) may have been mediated via perceived system quality. Future research should investigate whether the different relationship between involvement and user satisfaction for participants and non-participants in this study can also be observed in systems developed by IT professionals.

Source of involvement

Not only does involvement have a different effect on UDA success depending on whether or not the end user has participated in development, end user involvement with an application is derived from different sources depending on whether or not they participated in development. Barki and Hartwick (1991) proposed that the quality of an information system influences the level of psychological involvement of users with the completed system. However, the results of this study suggest that this is only the case when the user does not participate in the development of the system. When the user of the system is also the developer, system quality does not play a role; rather participation determines involvement. Thus end user developers may believe that their applications are important and relevant regardless of their fitness for use. Whilst this may suggest cause for concern, the improved outcomes for end users who have developed their own application over those for other end users who might use them and the similar total effects of system quality on individual impact for both groups (0.378 & 0.360) suggest that this is not an issue.

CONCLUSION

This study has differentiated between the effects of the behaviour of participating in application development and the psychological state of involvement with the application in the user developer domain. While participation results in greater success on all the measures included in the study, the effect of participation is mediated by involvement. And involvement is more complex than anticipated from previous research. In this study, involvement was derived from one of two sources, depending on participation: for participants in development, involvement was derived from their participation but was unaffected by system quality, while for non-participants, involvement was derived from system quality. Involvement acted differently, too: the involvement derived from system quality directly affected both perceived system quality and user satisfaction, while involvement derived from participation directly affected only perceived system quality. Future research should study these effects in the corporate applications domain.

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