Investigating affective response and job impact with ERP adoption

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ABSTRACT

The implementation of Enterprise Information Systems generally has disruptive implications for the workforce directly affected by them. Normal change management procedures typically address such issues through user training programmes, based on the perhaps unfounded assumption that users just need to understand the new facilities offered to be able to adapt to new ways of working. It is assumed that any emotional distress and unhappiness would disappear as soon as the users realize the benefits of the new system. In this paper we report on an investigation of such a situation where an ERP system replaced a home-grown student system that had been in use for many years. An inductive analysis of interview data was undertaken, leading to a framework of five linked categories. We draw conclusions from the framework which point towards more effective ways an organisation can deal with the affective responses of users, mitigating subsequent negative job impact.

KEYWORDS: ERP adoption, Affective response, job impact, user emotions, inductive analysis

1 INTRODUCTION AND BACKGROUND

A common problem experienced when adopting commercial off-the-shelf software (COTS), is the gap between the functionality offered by the software and that required by the adopting organisation. As a result, organisations have to choose between adapting to the new functionality, living with the shortfall, instituting workarounds, or customizing the software [1]. A class of COTS that has this characteristic in the extreme is Enterprise Resource Planning (ERP) systems. ERP systems present the organisation with a plethora of so-called best practices embedded in the software [2] and [3], from which the organisation has to make specific choices to meet its specific needs. This assumption of universal "best practice" has been cited as a prime cause of a lack of fit between functionality provided and required [4].

The situation that would then follow is one where, at the same time, the organisation undergoes a major transformation, and users have to come to terms with new ways of work. This implies unlearning previous practices and overcoming 'knowledge barriers related to ERP and the organizational changes that implementation carries with it' [5]. Hence the disruptive and threatening nature of ERP implementations [25]. This organisational transformation 1... triggers primary, background, and social emotions [among users of the system] that need to be carefully dealt with...' [6]. Yet, as pointed out by McGrath [7], 'most IS research ... ignores or marginalizes the emotionally charged behaviours through which individuals engage in, and cope with the consequences of, IS practice and associated organizational change.' Moreover, as

pointed out by McGrath, 'affections are often conceived as a phenomenon to be eradicated - an affliction requiring a cure.' While this opinion of management and consultants involved in the organisational transformation can perhaps be understood, it is sadly supported by IS research, where, as McGrath says, 'IS innovation literature reveals three main attitudes to the emotional domain in which IS practice and associated organizational change initiatives unfold. The dominant position is to say nothing of emotions, suggesting that IS research and professional practice are purely rational processes, devoid of affections ... Another prevalent attitude is to mention emotions 'en passant', acknowledging that affections are involved in the IS innovation process but engaging in no (substantive) effort to give them analytical attention.' Promoting a third approach, McGrath argues '...that emotions colour every encounter we have with the world' and, following her proposed approach, in her paper analyses a case study '...to try to make sense of actors' feelings and affections - not in a managerialist inspired attempt to control them, but to understand their nature and the role they play in the innovation process.'

The transformation of work practices with IT use was explored by Vaast and Walsham [8], who focused on how such practices actually are transformed. Looking ahead, they remarked that 1it would be illuminating to question the role of emotions and of agents' physical engagement in their practices.' This, they point out, 1could further advance our understanding of IT use and practice change, regarding users not only as social and cognitive agents, but also as emotional and bodily agents, actively engaged in their context'.

In this paper we respond to the challenge of Vaast and Walsham and follow the example set by McGrath by analysing the affective response of users to an ERP system and its implementation project. The contribution of our paper is threefold: First, it contributes to our understanding of the affective response of users to information systems, in particular ERP systems, and their implementation; second, we develop a framework that provides an explanatory model of the affective response of users to the system and implementation project, and the subsequent job impact; and third, drawing conclusions from the framework, we point out more effective ways to assist users in adapting to new ways of working, and adopting new systems into their ways of working.

The research was done at a South African Higher Education Institution. To preserve anonymity, we shall refer to it as TER. An ERP system was implemented at TER as part of a strategic integrated information management system for student administration. We shall refer to this system using the acronym PERP. Its aim was to modernise student administration systems, remove deficiencies and simultaneously align the university with global best practise. University leadership sanctioned the purchase and roll-out of PERP from the preferred vendor BAS (an acronym) after an open tender from competing vendors.

The task of the implementation project was to replace the Institution's home-grown student system with which staff members were familiar (referred to as LEGACY) with the PERP student system. In the first two months of 2006 most of TER's 18 000 students were registered for the first time on PERP, as opposed to LEGACY. This study was performed in June and July of 2006 after staff in the faculties had been using the system intensely for about six months.

The remainder of the paper is organised as follows. In the next section we briefly outline our research approach and methodology. This is followed by details about the data collected and how this data was analysed. The data analysis followed an informal style of a grounded theory approach, and led to the identification of a number of interrelated categories. Next, we present the results of the data analysis in an explanatory framework, from which we derive recommendations that could point towards more effective ways to assist users in adapting to new ways of working, and adopting new systems into their ways of working. Finally, we discuss the limitations of the present study and point out directions for further research.

2   RESEARCH APPROACH AND METHODOLOGY

An interpretive research approach was followed. The researchers therefore aimed at gaining a conceptual understanding of the problem at hand from the qualitative data collected [8]. To achieve this we followed the principles of Klein and Myers [9] for conducting interpretive field studies and used a general inductive approach to analyse the qualitative data [10] which

could be described as an informal grounded theory method. We first describe the data collection process, and then discuss the inductive analysis of the data.

3   DATA COLLECTION

Interviews were the primary method of gathering data in this study and, at a secondary level, organisational documentation relevant to the PERP implementation project was also reviewed. Support staff and faculty managers of two faculties at TER formed the participant group in the research study. The staff interviewed had had extensive direct and consistent interaction with PERP. A total of 7 interviews were conducted with administrative support staff from two faculties including the two faculty managers. Faculty managers were able to provide a broader perspective and insight into issues around PERP at TER. While one interviewee had been in her post for only one year, most staff had extensive TER experience with one interviewee citing 26 years of experience at the Institution. Participants were interviewed in an indepth manner; on average, each interview lasted approximately forty-five minutes. Interviews were semi-structured with participants' anonymity being ensuring. Interviews took place in the offices of the participants and were recorded in all except one case, where notes were taken during the interview.

4   DATA ANALYSIS

The primary purpose of the inductive approach that was followed to analyse the data was to allow research findings to emerge from the frequent, dominant or significant themes inherent in raw data [10]. In Thomas' [10] approach, this is achieved by:

- Condensing extensive and varied raw text data into a brief, summary format.
- Establishing clear links between the research objectives and the summary findings derived from the raw data and to ensure these links are both transparent (able to be demonstrated to others) and defensible (justifiable given the objectives of the research).
- Develop a framework or theory about the underlying structure of experiences or processes which are evident in the text (raw data).

Thomas [10] describes the underlying assumptions of the general inductive approach as follows:

1. Data analysis is determined by both the research objectives (deductive) and multiple readings and interpretations of the raw data (inductive). Thus the findings are derived from both the research objectives outlined by the researcher(s) and findings arising directly from the analysis of the raw data.

2. The primary mode of analysis is the development of categories from the raw data into a model or framework that captures key themes and processes judged to be important by the researcher.

Categories	Concepts		
Affective Response	anxiety frustration resistance to change	challenge low confidence satisfaction	excitement resignation -
Facilitating conditions	documentation	support	training
Implementation actions	adaptations communication	consultations planning	requirements testing
Job impact	access independence learning	meaningful networking procrastinate	recognition valuable workload
System perceptions	ease of use flexibility	inefficiency slowness	usefulness user friendliness

Table 1: Table 1: Concepts categorized into categories

3. The research findings result from multiple interpretations made from the raw data by the researchers who code the data. Inevitably, the findings are shaped by the assumptions and experiences of the researchers conducting the research and carrying out the data analyses. In order for the findings to be usable, the researcher (data analyst) must make decisions about what is more important and less important in the data.

4. Different researchers are likely to produce findings which are not identical and which have non-overlapping components.

5. The trustworthiness of findings can be assessed by a range of techniques such as (a) independent replication of the research, (b) comparison with findings from previous research, (c) triangulation within a project, (d) feedback from participants in the research, and (e) feedback from users of the research findings.

The interview transcripts were independently read and reread by both researchers to discover the multiple meanings inherent in the text. Each of the researchers identified text segments in the interview transcripts and labelled these as concepts. Categories were created to which such concepts, together with their associated text segments, were assigned. Additional concepts were added to the categories where they were relevant. Eventually, as the process progressed, initial descriptions of the meaning of each category were developed. Upon completion of this coding process, the researchers compared their individual analyses. Where differences occurred, these were argued and resolved, often necessitating a reread of the transcripts. Eventually, consensus was reached about a total of 32 concepts, occurring a total of 235 times throughout all transcripts. These concepts were categorized into five categories and are shown in Table 1. The final step in the analysis involved the discovery of links between the different categories, which, in this case, show the causal relationships between categories.

The categories that emerged from the analysis were: Affective responses to the ERP system; Job impact of ERP system; Impact of implementation; Impact of facilitating conditions; and System perceptions. These are discussed next. The discussion is corroborated by liberally quoting from the transcripts. The reference given for each quote identifies the particular interviewee in terms of his/her job position and faculty.
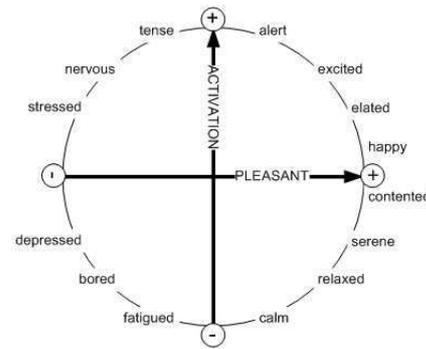

Figure 1: Figure 1: Two dimensional classification of affective response. Adapted from [13] and [11]

Affective Response Concept	Count	Satisfaction/Pleasant	Activation
Frustration (stressed)	10	Low	High
Resistance to change (stressed)	10	Low	High
Anxiety (tense)	7	Low	High
Resignation (sad/depressed)	5	Low	Low
Low confidence (sad/depressed)	2	Low	Low
Excitement	6	High	High
Challenge	4	High	High
Satisfaction (Content)	6	High	Low

Table 2: Table 2: Count and classification of affective response statements

5 AFFECTIVE RESPONSES TO THE ERP SYSTEM

Most studies on technology acceptance and resistance to organisational change give little analytical attention to the emotions or affective responses of users [7]. Yet, the first primary theme to emerge from our interview analysis is the affective experiences of participants when engaging with PERP.

Emotions can be classified according to two dimensions: the activation dimension and the pleasantness dimension as depicted in Figure 1 (Feldman 1998). Affective responses to an ICT implementation can hence be expected to signal engagement, disengagement, satisfaction or dissatisfaction with a change [25]. Satisfaction, an important IS outcome variable, is positively related to satisfaction with facilitation, task, process and outcomes. In contrast, negative emotions such as anger and frustration emerge when there are major disagreements or when parties interfere with the attainment of each other's important goals [11]. Aladwani [12] noted negative affective responses to ERP implementations varying from feeling disengaged, apprehensive, fearful, unsure about job tasks and responsibilities, unsure of role and position in the organisation, incompetent and threatened. These negative emotions can adversely affect group outcomes and affective acceptance

In Table 2 below, the affective responses expressed by interviewees were classified according to satisfaction and engagement. Generally respondents expressed more statements of high (as opposed to low) engagement but low (as opposed to high) satisfaction. These affective responses are now analysed.

Anxiety was related to a lack of training, high

workloads, the change in work processes and the new system. Frustration was attributed to the amount of learning, lack of understanding, inefficiencies in the system, errors in the system, high workload and poor project support.

'There certainly was a very high-level of anxiety before we went into registration in February because the training had been about 6 months before' (Faculty Manager, Faculty A) 'And it was A NIGHTMARE! 3000 students we had to register'; 'It's so frustrating when you are doing something and you don't actually know if you're doing the right thing'; 'It's so frustrating, when you implement a new system you are so busy, there is so much to learn' (Admin Officer, Faculty B) 'I think when you first start a new process, it's quite a nightmare'; 'Waiting for a response and trying to find out if your request is attended to, is frustrating' (Admin Assistant, Faculty B) 'There was a little bit of trepidation because it was a new system' (Faculty Manager, Faculty B) 'I feel short and wonder when will PERP run smoothly and not waste my time' (Postgraduate Officer, Faculty B) 'You think you have completed it properly and you think it's done... and something will go wrong for some reason or other. It's really frustrating' (Admin Assistant, Faculty A)

ERP implementation projects rarely consider the impact of the system on user's quality of life, levels of stress and task uncertainty [6]. Yet the subsequent user resistance is seen as a key implementation concern [14]. According to Lapointe and Rivard [14], early resistance focuses on the system itself as opposed to later resistance which can become political in nature and questions the system's value or its advocates. In this study the resistance clearly focussed on the system itself, confirming 'early resistance' features. Resistance to change was related to comfort with the legacy system, the complexity and foreign nature of the new systems as well as a lack of effective project communication on the need for change. Previous research has also shown a significant relationship between emotional exhaustion from stress and voluntary turnover during system implementation [15]. Such emotionally exhausted individuals exhibit counterproductive work behaviour and reduced job performance and tend to quit their jobs [15]. In this study, some staff appeared resigned to the change, yet statements about low confidence and potential resignations were also made.

'I was so embedded in the old system and at my age I thought I'm out of here' (Admin Assistant, Faculty B). 'I don't even know why we had to change' (Admin Assistant, Faculty A). 'When I was told we got this new system and it was from the States, there was an in-built resistance to it, like why???'; 'Because it is a little bit complicated and people are resistant to it, especially old users of LEGACY' (Statistics Officer, Faculty B). 'You just have to get on with it you know, you don't have a choice' (Admin Officer, Faculty B). 'No. I'm still not confident at all' (Admin Assistant, Faculty A).

According to Wright and Cropanzano [15], research is still needed to more thoroughly investigate

mechanisms by which these emotionally exhausted individuals learn to reframe situations as challenging as opposed to stressful. Zorn's [25] research shows that emotional reactions to an implementation are 'inherently ambiguous and negotiable'. In this study we found that staff who expressed satisfaction with using the system either relating it to the challenge or to increased learning, both resulting in a positive effect on job performance.

'Yes, because it's a challenge and you see that you are getting to the end result, you feel good about it' (Postgraduate Officer, Faculty B). 'I'm keen to learn so as soon as we start a new process...I'm keen to get into it' (Admin Assistant, Faculty B). 'It's very nice to become competent in a new system, that is rewarding' (Statistics Officer, Faculty B).

6 JOB IMPACT OF ERP SYSTEM

When these interviews were performed, users were still struggling to maintain adequate levels of job performance due to high workloads and subsequent exhaustion. This is not unlike the situation faced by other Higher Educational Institutions undergoing the same experience [16]. The increase in workload was attributed to the timing of the implementation, the parallel systems being run, the amount of learning required on the job and the attributes and nomenclature of the implemented solution.

'It felt like I was doing a double load, the one being my daily tasks and the other all the learning I had to do' (Admin Assistant, Faculty A). 'I think the implementation was to me problematic as it came right at the beginning of the year when it's busy so it caused a lot of pressure and stress on the users' (Faculty Manager, Faculty B). 'It's very difficult to work with the system because they keep trying to keep two systems running in parallel' (Admin Officer, Faculty B). 'I think that this is a real big user-intensive system and at the moment because we don't understand the system and because there are so few of us that are using it' (Admin Officer, Faculty B). 'At the end of the day, I'm so utterly exhausted' (Admin Assistant, Faculty A). 'Also having to learn a completely new nomenclature is [a] huge thing for the brain to handle' (Statistics Officer, Faculty B). 'When I came back to the office and had to deal with the things in real-time was when I actually did the learning' (Admin Assistant, Faculty A)

In turn the increased workload and restricted authorisations reduced learning. These are serious concerns considering the impact of learning on job performance [17].

'In fact we are so busy there is no time to explore anything at the moment' (Admin Officer, Faculty B). 'With regards to exploring areas where you haven't been trained you won't get access' (Admin Assistant, Faculty B).

Most interviewees believed that the system had value to the organisation but that this was not evident yet and would only accrue in the future. They

believed that as their knowledge, confidence and mastery increased more value would be obtained and that valuable further fixes and functionality would be rolled out. The integrated nature of the system was seen as being valuable.

'I think ultimately in year 4 THEN people are going to see that this actually is a better system. But to ask them to make a comparison now they're going to tell you NO' (Faculty Manager, Faculty A). 'I think next year will be better when I understand it better and have more confidence' (Admin Officer, Faculty B). 'I think that an integrated system is good where the whole university is working on the same thing, I think is very valuable' (Statistics Officer, Faculty B).

The job impact appeared to be a personalised response. Some staff were able to turn the implementation into an opportunity and referred to the system promoting independence, learning, increasing networking and allowing them to informally support their peers. In contrast many users felt that the system had a negative impact and was not meaningful.

'Generally I do think it promotes independence'; 'It is web-based, which means that I can work from home' (Statistics Officer, Faculty B). 'People seem to work together in case of common problems and it helps them to network' (Faculty Manager, Faculty B). 'But I've certainly never heard any of my staff talking about this being a meaningful part of my life' (Faculty Manager, Faculty A). 'I found it stimulating and interesting' (Admin Assistant, Faculty B). 'PERP is a bonus for me in terms of my CV'; 'If I know something and can help other colleagues, it's meaningful to me' (Postgraduate Officer, Faculty B).

Because of the political nature of ERP implementations, 'changes in job' and personal characteristics such as open-mindedness can play a large role in accepting ERP systems [18]. Research has shown that users feel threatened by ERP implementations. These threats range from exposing computer illiteracy; beliefs about jobs being threatened; an inability to perform their jobs, to maintaining existing power and authority structures [12]. Mastering the system was seen to place users in a powerful position. The disruptive impact on power bases was felt, with one user referring to the system's ability to reduce everyone to a level footing.

'I feel very powerful, because I am one of the few people at this university who knows' (Admin Officer, Faculty B). 'It puts everybody on a level footing allowing a greater opportunity for learning' (Admin Assistant, Faculty B).

The integrated nature of ERP systems requires cross-functional cooperation, and social conflicts on how to divide and coordinate work need to be resolved [19]. The implementation had resulted in an uncomfortable reliance on other sections. In addition, certain restrictions were placed on their system access.

'The other huge problem with BAS is that I can't do everything for the student myself - I need access to people in admissions to do something before I can do something' (Statistics Officer, Faculty B). 'In the enrol section, they have restricted our access so we cannot correct our errors' (Admin Officer, Faculty B). 'There are certain things that only [central staff] can do and they are now actually talking about devolving that to the faculties because they can't cope' (Faculty Manager, Faculty A).

According to Kositanurit, Ngwenyama and Osei-Bryson [20] individual performance is strongly influenced by the ability of ERP systems to provide accurate, current and sufficient information. There were mixed comments from users on the ability of the system to satisfy their informational needs. However, the role of authorisations in potentially restricting access to certain information needs to be noted.

'I ask: can I not put together my own report and then I get told No you don't have the access to do that' (Admin Officer, Faculty B). 'This is one very very sore point...I haven't yet reached that stage where I can obtain the information that I need' (Statistics Officer, Faculty B). 'You can get information that you wouldn't in LEGACY' (Admin Assistant, Faculty B).

7   IMPACT OF IMPLEMENTATION

Zorn's [21] research shows that change agents try to influence emotional experiences of users through communication. Aladwani's [12] research on resistance to change proposes that to change the attitudes of ERP users, management must first try to influence users' attitudes through the communication of system benefits and hence build anticipation. However, he warns against building unrealistic expectations, which could increase resistance.

Project communication on the benefits of the system appeared to create initial excitement. The integrated nature of the system was seen as being valuable and users attributed a certain amount of prestige in being early adopters of a global package in Africa which showed that project communication had had a positive impact on system perceptions. However, some users cited minimal benefits being communicated and others talked of negative communication relating to project delays and bugs.

'There was so much speak, you know rosy speak, that made everyone look forward to it' (Admin Assistant, Faculty A). 'I think that an integrated system is good where the whole university is working on the same thing, I think is very valuable' (Statistics Officer, Faculty B). 'TER is making history as BAS is worldwide' (Postgraduate Officer, Faculty B). 'We heard reports of, they are still sorting out this problem, they are still sorting out that problem, so my attitude was ¡GROAN¿'; 'we had a few little introductory talks and this is the system that we are going to be using and you will all be trained and it's just better' (Statistics Officer, Faculty B).

User participation is another strategy in reducing resistance to change. Depending on different resistance theories, user participation either has merits in improving design, or securing user commitment or is not always appropriate [22]. User commitment can

be secured by convincing group leaders to participate in the implementation process and they would then subsequently convince their colleagues that the ERP system is to their benefit and useful [12]. We found that while the project had used high levels of participation at the analysis stage, project management had omitted to communicate why many design decisions had been made and therefore lost any opportunities of maintaining commitment.

'They asked us a lot of questions when designing the system but it just seems to me that they just didn't listen to any of our answers' (Admin Officer, Faculty B). 'But I do feel that I have no say or no authority' (Admin Assistant, Faculty A). 'In some ways I do feel that PERP has been 'foisted' on us' (Statistics Officer, Faculty B).

An ERP implementation project needs to make trade-offs between adjusting work practices to the ERP 'best practices' or enhancing or modifying the ERP to fit the organisations' practices. Both options come at a cost, adjusting work practices can increase organisational disruption and in turn increase user stress, while modifying an ERP has long-term costs when the vendor updates and upgrades are performed [23] and [20]. Statements from users indicated that the project chose in most cases to modify the ERP system as opposed to the more accepted model of first re-engineering work practices [16].

'The business process we work out and BAS has to be configured to fit that, in most cases that's how it's worked'; 'There were one or two examples where we had to change the business processes because BAS didn't fit in with it' (Faculty Manager, Faculty A).

'They had to do many modifications so that we can use it' (Admin Assistant, Faculty B).One of the project's responsibilities would also have been adequate testing of the system. Users expressed frustration with errors in the system and these could be attributed to inadequate testing.

'There've been major errors in the system that are still to be corrected' (Faculty Manager, Faculty A).

8   IMPACT OF FACILITATING CONDITIONS

Facilitating conditions are described as 'the degree to which an individual believes that an organisational and technical infrastructure exists to support use of the system' [24]. While formal and informal training and support structures are all essential elements of this organisational support, providing sufficient resources for an adequate formal call resolution service and effective training are a tangible display of organisational support. Training is also seen as an opportunity to build positive responses toward the system and to sell potential benefits [12]. While social networks and encouragement from peers are also seen to exercise considerable influence over individual behaviour [25], the IS literature has not sufficiently examined group/peer support [18].

The interview analysis showed mixed feelings about the effectiveness of the documentation and training but an acknowledgement that training was under resourced. It was interesting to note that the training tried to address the emotive responses to the system.

'The written manuals are good' (Faculty Manager, Faculty B). 'It is hard to find things in the manuals when you have needs and you don't know which manual to even look at' (Admin Assistant, Faculty B). 'We were just told: 'click this, click this, click this-don't ask questions' (Faculty Manager, Faculty A). 'Excellent [training] and I think the reason for that is that its people who were in such posts already' (Postgraduate Officer, Faculty B). 'And there is probably a recognition that there needs to be more [training]' (Faculty Manager, Faculty B). 'And then you have to go for training and talking about psychological effects makes it stressful and very frustrating' (Admin Assistant, Faculty B).

The formal support (help desk) was in all cases seen to be inadequate. Users relied more heavily on the support of their peers as they could not wait for days for calls to be resolved.

'Relying on help desk is strenuous' (Statistics Officer, Faculty B). 'The help desk support is used as a last resort only' (Admin Assistant, Faculty A). 'I still need to ask a lot of people like my colleagues that I know have already done the process just to give me guidance' (Postgraduate Officer, Faculty B). 'You actually need somebody to help you. You need somebody to be on call' (Admin Officer, Faculty B).

9   SYSTEM PERCEPTIONS

We found divergent views on the user-friendliness and ease of use of the system. Some of the system problems that users commented on were the perceived lack of integration, the lack of fit with local requirements [1], the 'American' terminology and the slow performance of the system. The system interaction in many cases was found to impact on the affective responses of the users and had a job impact.

'I think the problem that we are experiencing is because the package is translated from abroad and our needs here are quite different'; 'I think for a new user it's easier than the old LEGACY system because there are things that you just had to memorise'; 'It flows better than LEGACY' (Statistics Officer, Faculty B). 'It's difficult in that it doesn't seem that well integrated' (Faculty Manager, Faculty B). 'The terminology itself ¡groans!¿ it's completely different'; 'The intricate and long structure and flow and steps are very frustrating and do not add anything of user-friendliness to the system'; 'Sometimes it's so incredibly slow and it hangs' (Admin Assistant, Faculty A).

Following the data analysis we analysed the links between the above five categories. This led to the framework shown below in Figure 2, which is discussed next.
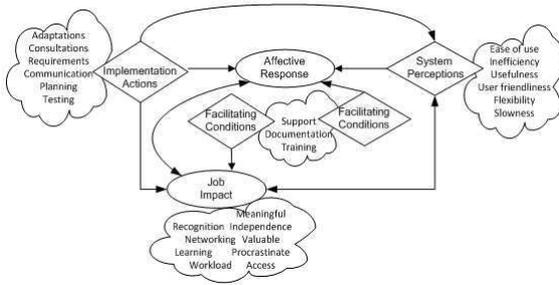
Figure 2: Figure 2: Framework showing the links between categories

10 FRAMEWORK

The derived framework (Figure 2) shows the high levels of connection between the various categories that emerged from the analysis. These connections are now discussed, supported by only selected (due to space limitations) quotes from the interviews.

In the first instance, implementation choices were found to impact on system perceptions. In this case, the decision to run systems in parallel gave users the perception that the system was inefficient and the amounts of modifications and incorrect requirements influenced users' perception of the system being valuable.

'It's very difficult to work with the system because they keep trying to keep two systems running in parallel' (Admin Officer, Faculty B).

All four other categories were found to impact affective response. In terms of facilitating conditions, lack of support and training increased frustration while peer support reduced anxiety. In the implementation category, project communication caused excitement and anxiety while poor planning decisions and a lack of determining correct requirements increased frustration.

'I still need to ask a lot of people like my colleagues that I know have already done the process just to give me guidance' (Postgraduate Officer, Faculty B). 'There are so many things that we can't do.; there are how many change requests that are still out there' (Faculty Manager, Faculty A).

A range of emotional responses was elicited by the various concepts under job impact, such as the amount of learning, increased workload and the restriction of access to the system. System perceptions such as ease-of-use, inefficiencies and slowness also elicited emotional responses.

'..another area of great frustration with various areas not being allocated to faculty staff for functions we had in the past and then having to sit with the papers on your desk' (Admin Assistant, Faculty B). 'BAS doesn't offer anything like shortcuts and the structure of each process or function is very limiting. It's really frustrating' (Admin Assistant, Faculty A).

The job impact was in turn influenced by the other four categories. In terms of facilitating conditions, peer support had the strongest effect on job impact, allowing for networking, peer recognition, and increased independence. System perceptions had a job impact in that inefficiencies in the system resulted in increased work hours while the user friendliness of the system made it valuable in meeting job requirements. In terms of the implementation, planning decisions such as when to train users and start using PERP resulted in reduced learning and workload increases which both had a job impact.

'you have to rely on others to learn the things to be able to use it independently' (Admin Officer, Faculty B). 'It is a valuable system because it is more user friendly' (Statistics Officer, Faculty B).

Finally, the job impact also influenced system perceptions. For example, reduced access given to staff resulted in perceptions of system inefficiencies and as learning in the job increased, the perceptions of ease-of-use of the system increased.

'it's relatively easy to navigate once you become familiar with the procedures' (Admin Assistant, Faculty B).

11 DISCUSSION AND CONCLUSION

Through an inductive analysis of interview data, we derived a framework of five categories which explains the impact of an ERP implementation on users' affective responses and the subsequent job impact.

The framework shows that implementation actions and decisions; the support or facilitating conditions provided by the organisations; and the perceptions of the system all influence both users' affective response as well as their job performance. Rather than ignore or try to suppress emotive responses they need to be 'carefully dealt with by creating trustful spaces of interaction, patiently over time' [6]. According to McGrath [7], emotions not only indicate concerns of personal loss of status or power but also suggest legitimate directions for an organization.

In this study, the ERP system had been in use for six months and many negative job impacts had transpired. Users had high workloads, were exhausted and found themselves under restrictive authorisations and in a situation where learning was reduced. Cross-functional co-operation was being strained and informational needs were not always being met. Some staff felt that their work was threatened by the introduction of the ERP while others felt challenged. These impacts on their jobs are significant and the range of emotions being expressed are understandable and in most cases legitimate.

The affective responses were mostly high in terms of engagement and low in terms of satisfaction. This would seem to signal that users were wanting to help resolve the situation and be part of the solution, and this could have provided TER with the key to how the situation could have been handled better. Drawing conclusions from the framework, we point out below more effective ways to assist users in adapting to new ways of working, and adopting new systems into their ways of working.

The framework shows the importance of affective responses from a job impact point of view, with the

latter being directly affected by the former. If an organisation wants to ensure that the ERP implementation would have as little as possible effect on the jobs of users of the system, what should then be done? Typically, organisations (including the vendors of the systems) ignore the affective responses of users discounting them as misplaced [6] and continue with implementation projects in the belief that things will sort themselves out. To be sure, as has also here been the case, vendors and/or the organisation would provide training, documentation and support to affected users. Our analysis shows that these efforts affect both the affective responses of users and impact on their jobs. It is therefore important to look at *how* affective responses and jobs are affected by these, what we have called, facilitating conditions.

The effect of facilitating conditions on affective responses:

Training: The lack of training increased frustration: 'I found the training TOTALLY inadequate It was a mindless approach they were just, teaching you how to follow an instruction' (Faculty Manager, Faculty A); 'Training was a BIG waste of time!!' and 'I would be so bored at times during the training' (Admin Assistant, Faculty A).

Documentation: Inadequate documentation similarly increased frustration: '... it is hard to find things in the manuals when you have needs and you don't know which manual to even look at' (Admin Assistant, Faculty B); 'I still refer back to my notes when I do certain tasks' (Admin Assistant, Faculty A).

Support: The above was mitigated by peer support, which reduced anxiety. This, however, was not arranged by PER or BAS, but by the users themselves: '... there are lots of times when we ask each other for help...' (Admin Assistant, Faculty A); 'you have to rely on others to learn the things to be able to use it independently' (Admin Officer, Faculty B).

The effect of facilitating conditions on job impact:

Training: Training that was not properly coordinated decreased job effectiveness: '... there have been problems with us going on training and then not getting access' (Statistics Officer, Faculty B).

Documentation: Inadequately supporting tasks to be done: '... some of it I think can be condensed and layered out in step by step instructions' (Admin Assistant, Faculty B).

Support: Again, peer support and not support by TER or BAS allowed networking, peer recognition and increased independence: '... we keep asking where to find things and other colleagues help out' (Admin Assistant, Faculty B).

In the above we focused on Facilitating Conditions, these being the actions that TER and BAS had most control over, and could have handled differently. A similar approach can be followed with respect to actions categorized under Implementation, such as Adaptations; Consultations; Requirements; Communication; Planning; and Testing. As the framework shows, handling Implementation better, influences Job Impact directly, and also indirectly, through

System Perceptions.

Recall (see above and Table 2) that users expressed a willingness to be engaged in the project implementation, even while their satisfaction levels were low. This means that TER and BAS could have capitalized on this (willingness) and followed a different approach in which users would have been more involved and consulted, provided with better support, documentation and training, commensurate with the levels of maturity and experience of the users. This could have led to greater job effectiveness and less negative affective responses, which, as we have seen, would have reinforced jobs positively. While it can be argued that such 'what if' projections are unfounded, we base our conclusion on the expressed responses of the users, and extrapolate from that to infer that the users' affective responses would have been more positive, leading to positive impacts on their jobs, if the above route had been followed. To be sure, it can also be argued that even if this route were followed, then other, currently hidden 'variables', would have manifested themselves. But such argumentation will get us nowhere, and just leads to an infinite regress. We submit that the evidence presented here merits a different approach in terms of the important facilitating conditions, and would go so far as to say that this would also be a reasonable route to follow in other implementation projects. What it all boils down to, is that vendors and implementing organisations should recognize the role of affective responses of users to the disruption of their work life, and accept that this could be changed for the better, as Ramos et al. [6] have said, '... by creating trustful spaces of interaction, patiently over time'.

12 LIMITATIONS AND FURTHER RESEARCH

Our study has focused on the situation at TER and was not conducted as a longitudinal study. More information can obviously be obtained if users are followed over a period of time, and this would enable richer conclusions to be drawn.

Ideally, in order to validate the inferences we have made above, one would want to perform an Action Research study where the organisation and vendor are assisted to pay attention to and handle the affective responses of users in such a way as to ameliorate the job impact of the change brought about by the implementation of the ERP system.

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