

Understanding Security Strategy through Structural Authorization in SAP ERP HCM in Maintaining ESS and MSS Information Democracy

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Abstract: Employee information/database is the most crucial and sensitive information that an organization maintains. The employee master file is the central element of all system control within an organization. Information maintained in the employee master record is sensitive and subject to privacy and legislative requirements and therefore should be adequately controlled. Giving business users more freedom to access and use information may result in more mistakes and duplication than IT is comfortable with, but the alternative is often worse: business people making decisions with inadequate data because they can't wait for slow IT processes. The paper addresses the challenges to the so called "information democracy" available to employees and managers so that they rightfully address their rights and duties. The paper tries to probe deeper into "Information Democracy" as a growing wave amongst the Gen-X employees and the challenges associated with master data availability to employees as a threat to security lapse to most sensitive information of an organization. Businesses should strive to combine consistent information governance with decentralized access to data and decision-making. Liautaud called this "information democracy," and it's similar to what Gartner now calls governed data discovery: platforms that address both business users' requirements for ease of use and enterprises' IT-driven requirements.

Once the understanding to the concept of Information Democracy has been developed we would try to understand through ERP package of SAP the use of SELFSERVICE i.e. ESS/MSS which can be applied to make information related to business processes available to employees at their workstations. We would be analyzing the advantages of the usage of ESS/MSS through end users i.e. the employees and the managers. This analysis would assist in understanding the advantages of employee database accessibility for better strategic and management decision making. A primary research has been conducted to analyse the satisfaction level of the employees and managers as regards the use of ESS/MSS (Information Democracy), thereafter the awareness about the underlying threat to employee data base accessibility and maintenance has been analyzed through a pool of respondents from two companies Vodafone (Pune) and Fed-Ex where ERP SAP HCM has been implemented. Lastly, the inbuilt control and mechanization control system for security control which is available in ERP SAP HCM module has been studied with "Structural Authorizations" as a prime solution to maintain robust security system in an organization.

Keywords: ESS, MSS, ERP HCM SAP (ECC 4.0), Information Democracy, Authorizations, Proxy Users, Database Management, Employee Database, master data, Structural Authorizations.

I. INTRODUCTION

The role of the HR department continues to evolve. Organizations are expecting more from their HR teams without increasing headcount. For many organizations the role of the HR practitioner is in the process of transition from an administrative role to a strategic facilitator, who can add real value in strengthening the capabilities of the organization by implementing improvements to their human resource performance, so to compete better in the marketplace.

The shift in the HR department's focus has introduced the need to decentralize many of the HR administrative functions out into the workforce, to line managers, team administrators and to the employees themselves. This approach is of course supported by SAP, typically via Employee Self Service and Manager Self Service. One of the challenges is to ensure that the visibility of employee related data and associated transaction processing is contained and only available to those with proper authorization.

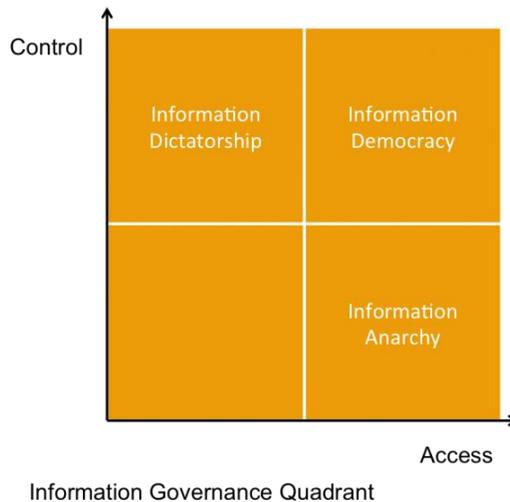
Any SAP HR related project where employee information will become available to non HR department users immediately triggers concerns, particularly for IT Managers and the SAP Support team responsible for SAP user administration, especially if they have limited exposure to the SAP HR application. Any breach of data confidentiality can undermine the system completely, not to mention any impact a breach may have to the individual concerned and to the organization.

II. WHAT IS INFORMATION DEMOCRACY?

BI technology has taken a big leap forward since the book came out a decade ago. But the tensions between IT and the business and need for tradeoffs have remained, and we're now seeing the latest generation of analytics struggling with the same issues. Although this data discovery has empowered business users in new ways, it has also introduced new dangers, in

the form of *Information Anarchy*. As businesses grew more competitive in past years, departmental managers realized they needed better information to make good business decisions. They realized that whatever information they could procure from the glass house of the IT department would not be adequate. Businesses should strive to combine consistent information governance with decentralized access to data and decision-making. Liguat called this "information democracy," and it's similar to what Gartner now calls *governed data discovery*: platforms that address both business users' requirements for ease of use and enterprises' IT-driven requirements. Of course, any form of democracy is hard, precisely because it requires constantly updated tradeoffs between different groups. The key is to build a system that everybody respects, even if they don't always like the result. This in turn requires that both IT and business people realize that some compromise is necessary. For example:

- Giving business users more freedom to access and use information may result in more mistakes and duplication than IT is comfortable with, but the alternative is often worse: business people making decisions with inadequate data because they can't wait for slow IT processes.
- Business people must realize that optimizing only their own information use and access can damage the ability of the organization as a whole to get a clear picture.



III. ESS AND MSS

ESS: Employee Self Service is a web enabled tool used to update their own data's by the employee itself. Allows employees to create, display, and change their own data in the company's intranet. In Personnel Administration, for example, employees can use the Personal Data service to create and edit their own personal data. In this way, employees can keep their own data up-to-date, while simultaneously reducing the number of time-consuming and expensive activities performed by the Human Resources Department. Employee Self-Service of my SAP ERP enables employees to create, display, and change their own HR-related data in the Enterprise Portal. MSS- Manager Self Service is a web enabled tool used for Managers to take report or update the data of subordinate

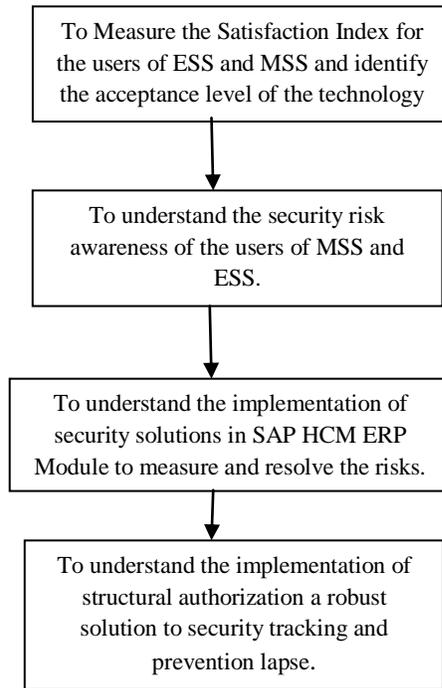
MSS: it is a web based application designed for the people who carry out management tasks. Here is the brief description. In particular, the business package supports managers perform the following:

Tasks related to the personnel responsibility for their team: - Controlling tasks within their budgeting responsibilities, Planning tasks, Project management tasks: supports managers in fulfilling their cost and budget responsibilities, including annual budget planning, budget monitoring, cost analysis, and correction of postings. Managers can check critical variances, monitor travel expenses, and track budget consumption on projects. *Staffing* -- Supports managers in their HR-related administrative and planning tasks. The application supports HR processes relevant to a manager's particular tasks -- from recruitment to the annual employee review and compensation planning. It allows a manager to display attendance information, as well as to change data for employees who have no access to PCs. SAP Manager Self-Service supports flexible reporting on data from different data sources, and a quota planning function enables managers to plan future staffing quotas.

Many organizations have recently invested in the implementation of SAP HCM and the optimization of their HR business processes. This has created new challenges in handling and protecting sensitive HR data, fraud prevention and compliance with relevant HR laws and regulations.

IV. RESEARCH METHODOLOGY

Following is the process for research as shown below.



- 1) A primary research has been conducted of approx 15 employees working in Vodafone and Fed Ex who are SAP end user. Most of the responses are from employees who are ESS and MSS users in the organization.
- 2) A secondary research has been conducted from the SAP Tutorials and Library about the technical considerations and terms applicable in security risks, threats and solutions in employee database maintenance and updations with special consideration to “Structural Athourisation”.

V. ANALYSIS AND DISCUSSION

Security threat: The employee master file is the central element of all system control within SAP. Employee information is stored in different info type records and is drawn upon by nearly every activity in the Payroll process including time entry, payroll processing and benefits administration. Information maintained in the employee master record is sensitive and subject to privacy and legislative requirements and therefore should be adequately controlled. This information includes the employees name, address, contact details and tax file number. Some of the SAP controls for HR and payroll data management are as follows.

Further information on the functionality, risks and controls of the SAP module is available in the *SAP ECC 6.0 Security and Control Better Practice Guide*.

Key control objectives:

| Control objective | Risks mitigated |
|--|--|
| HR and payroll data is appropriately maintained to provide accurate and complete employee information and payroll transactions | R201: HR master data is inaccurate. R202: HR master data is not secure. |

Risks and Controls:

| | |
|--------------------------------------|--|
| Risk 1: HR master data is inaccurate | |
| Risk type | Very High Risk |
| Consequence | Employee details may be incorrectly entered or maintained, which may result in duplicate payments, errors with superannuation contributions or employee deductions, or unapproved changes to the allocation of roles and delegations |
| Better Practice | <p><i>Define key data entry fields.</i> Key data fields should be defined in the system to confirm that information necessary to the completion of master data is entered.</p> <p><i>Restricting user access to view, establish and update master data.</i> Access to view, establish and update master data should be restricted to appropriately authorized users. Users with the ability to view master data should also be appropriately restricted to reduce the likelihood of inappropriate viewing or distribution of data.</p> <p><i>Schemas.</i> <i>Validation checks on certain fields warn the user that the information is duplicated in another employee record.</i> Validation checks should be configured to decrease the likelihood of inaccurate information being entered (for example, tax file number cannot be duplicated in another employee record).SAP does not provide a duplicate employee check similar to what is provided in vendor maintenance in the Purchase & Payables process.</p> |
| Risk 2 :HR Master Data Is Not Secure | |
| Consequence | Unauthorized users may have access to view and maintain sensitive HR and payroll data, which may compromise the confidentiality of personnel records and may also result in the processing of fraudulent payroll payments. |
| Better Practice | Structural Authorization |

VI. WHY STRUCTURAL AUTHORIZATION?

Assigning authorizations/user roles at Position rather than user level can greatly contribute to the efficiencies of SAP user administration. Such an approach can empower the HR team to assign employees to Positions knowing that the employee will inherit the relevant authorizations from the Position and automatically be structurally bound from the Position relationships within the Organizational Hierarchy. This can remove the manual intervention of the SAP Support team having to re-assign user roles at the request of HR each time an individual moves from one Position to another. The HR team can also assign to the employee's Position new object relationships that can also instigate a change to structural access, again without the need to engage with their SAP Support Team.

Implementation of Structural Authorization: In Human Resources, authorizations play a significant role since access to HR data must be strictly controlled. There are two main ways to set up authorizations for SAP Human Resources: one can set up *general authorizations* that are based on the SAP-wide authorization concept or you can set up HR-specific *structural authorizations* that check by organizational assignment if a user is authorized to perform an activity. The structural profile determines which object in the organizational structure the user has access to. The general profile determines which object data (info type, subtype) and which access mode (Read, Write,) the user has for those objects. In contrast to general authorization profiles, which are assigned using the Profile Generator (PFCG transaction), one can use table T77UA (User Authorizations = Assignment of Profile to User) to assign structural profiles. Structural profiles use the data model of the *Organizational Management* to build hierarchies using objects and relationships.

Steps to implement Structural Authorization: Let's take a business scenario to understand how structural authorization works. The scenario is as follows: "User SMITH is the chief of org. unit 00000220 "Executive Board –Italy" and he should be allowed to access data of those employees who belongs to this org. unit. The following section will tell you how this requirement can be addressed in SAP using structural Authorization.

Step1: Maintain structural authorization profile in view T77PR

| Auth.profile | No. | Plan vers. | Obj. type | Object I | Maint. | Eval.path | Status vec |
|--------------|-----|------------|-----------|----------|-------------------------------------|-----------|------------|
| ZD_TEST | 0 | 01 | 0 | 220 | <input checked="" type="checkbox"/> | 0-S-P | 12 |

By entering a specific evaluation path (O-S-P in this example) in the field Eval. Path, you can determine that the user is only authorized to access objects along this evaluation path. Evaluation paths "collect" objects from a start object in an existing structure according to their definition: The definition of an evaluation path determines the start object and which object types using which relationships are selected.

Few more fields which one can enter in this view:

- Period - In this field, you can define the profile according to the validity period of the structure. You can enter the following options: Key date, all, and different periods such as current year, current month and so on .If you select the entry D (current day), the structural authorization is limited to the structures valid on the current day.
- Depth (Display Depth): One can use this field to determine which level of a hierarchical structure a user is authorized to access.

Step2: Assign structure authorization profile to user in view T77UA

Change View "User Authorizations": Overview

| User name | Auth.profile | Start date | End date | Exclusion | Display Objects |
|-------------|--------------|------------|------------|--------------------------|-----------------|
| CHICAGO | CHICAGO | 01.01.1900 | 31.12.9999 | <input type="checkbox"/> | |
| COMMCLERK_A | COMMCLERK_A | 01.01.1900 | 31.12.9999 | <input type="checkbox"/> | |
| SAP* | ALL | 01.01.1900 | 31.12.9999 | <input type="checkbox"/> | |
| SMITH | ZD_TEST | 07.01.2000 | 31.12.9999 | <input type="checkbox"/> | |

Impact of Structural Authorization on SAP HR Transactions: The below screen shows the complete organization hierarchy of an organization using transaction PPOME.

Organization hierarchy for organization unit 00000220

| Staff assignments (structure) | Code | ID | Chief | ADT Name | ADT Mair |
|--------------------------------------|-------------|------------|------------------|----------|----------|
| Executive Board - Italy | Exec. Italy | O 00000220 | Pablo Filguerira | | |
| Chief Executive Officer - () | CEO-I | S 50000191 | | | |
| Pablo Filguerira | Filguerira | P 07495001 | | | |
| Executive Assistant - () | Exec.Asst I | S 50000192 | | | |
| Chief Financial Officer - () | CFO-I | S 50000193 | | | |
| Executive Assistant - () | Exec.Asst I | S 50000194 | | | |
| Chief Operator Officer - () | COO-I | S 50000196 | | | |
| Executive Assistant Operations - () | Exec.Asst I | S 50000197 | | | |
| Vice President HR-Finance - () | VP HRFIN I | S 50000198 | | | |
| Vice President Operations/Sales - () | VP Op/Sa I | S 50000201 | | | |
| Human Resources - () | Human Res I | S 50000712 | | | |
| Payroll Administration - () | Payroll I | O 50000714 | Lucia Iturbe | | |

When user SMITH logs on to the system and looks for the organization hierarchy using transaction PPOME, it will look like as shown.

| Staff assignments (structure) | Code | ID | Chief |
|--|--------------|------------|-------------------|
| IDES AG | IDES AG | O 00000001 | Eicko Schulz-H... |
| Verstand | Vorstand | S 50006025 | |
| Dr.Rer.Nat. sun Bronson | Bronson | P 00000001 | |
| TESTBER | TESTBER | US TESTBER | |
| do not delete: Recruiter for MSS & E-F Recruiter | XYL RadlerS | S 50006825 | |
| XYL Radler 1 Planstelle | XYL RadlerS | S 50007525 | |
| SAP WALLDORF GERMANY | SAP GERM | O 00000100 | Eicko Schulz-H... |
| Executive Board - Italy | Exec. Italy | O 00000220 | Pablo Filguerrira |
| Chief Executive Officer - (I) | CEO - I | S 50000191 | |
| Pablo Filguerrira | Filguerrira | P 07495001 | |
| Executive Assistant (I) | Exec.Asst I | S 50000192 | |
| Chief Financial Officer - (I) | CFO - I | S 50000193 | |
| Executive Assistant - (I) | Exec.Asst I | S 50000194 | |
| Chief Operator Officer - (I) | COO - I | S 50000196 | |
| Executive Assistant Operations (I) | Exec.Asst I | S 50000197 | |
| Vice President HR-Finance (I) | VP HR/FIN I | S 50000198 | |
| Vice President Operations/Sales - VP Op/Sa I | VP Op/Sa I | S 50000201 | |
| Human Resources (I) | Human Res I | O 50000712 | Lucia Iturbe |
| Payroll Administration - (I) | Payroll I | O 50000714 | Debbie Davis... |
| Executive Board - USA | US Exec. | O 00000300 | |
| Executive Board - Canada | CDN Exec. | O 00000400 | |
| Executive Board (Aus) | Exec. AUS | O 00000420 | |
| CATT-Test | New org unit | O 50002776 | Mr. GARY DAHL |
| TESTING FOR ECATT | VERMA | O 50002834 | Mr. Bronson Ch... |
| Accounts Payable D | 50000563 | O 50002926 | Hanno Gutjahr... |
| HR250Org1 | HR250Org1 | O 50003978 | Manaaert |

One easily notices that Smith can only view organization hierarchy for organization unit 00000220 not the complete organizational hierarchy

Display HR Master Data

Personnel no. 1

Find by: Person

Core Employee Info | Empl. contract data | Gross/net payroll | Net payroll

Infotype text: E

Actions: Organizational Assignment

Personal Data

Addresses

Bank Details

Family Member/Dependents

Challenge

Internal Medical Service

Maternity Protection/Parental Leave

Direct selection: Infotype: Organizational Assignment, STy

No read authorization for Organizational Assignment

When user SMITH tries to look for master data for personnel no. 1, he will get an error as shown as personal 00000220 is NOT a part of the org hierarchy

Maintain object

Find by: Position

Plan version: 01 Current plan

Object type: S Position

Object ID: 50006025

Object abbr.

Active | Planned | Submitted | Approved | Rejected

Infotype Name: E

Object: [checked]

Relationships: [checked]

Description

Department/Staff

Planned Compensation

Vacancy: [checked]

Acct. Assignment Features: [checked]

Authorities/Resources

Work Schedule

Employee Group/Subgroup

Time period: From 14.05.200

No authorization for S 50006025 1000 1

When user SMITH tries to look for details of position 50006025, he will get an error as shown in the screen-shot below. Reason: Position 50006025 is not a part of org hierarchy 00000220

As can be seen in Fig 1.0 and Fig 1.1 the employees who are end users to the ESS/MSS are highly content with the application. They feel information democracy is the key to any strategic growth for a company in an organization removing the barriers of information divide. Decision making and better reporting (through e-generated reports in HCM ESS) are major benefits of the ESS/MSS.

Following are the primary data analysis results:

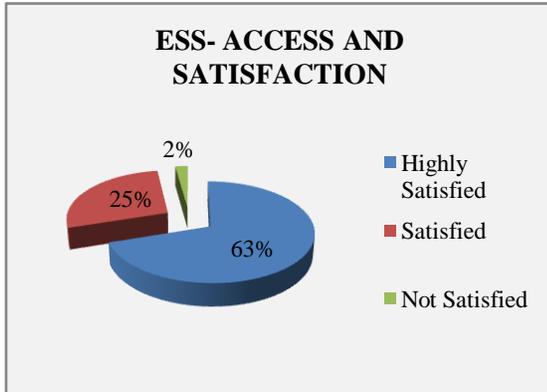


Figure 1.0

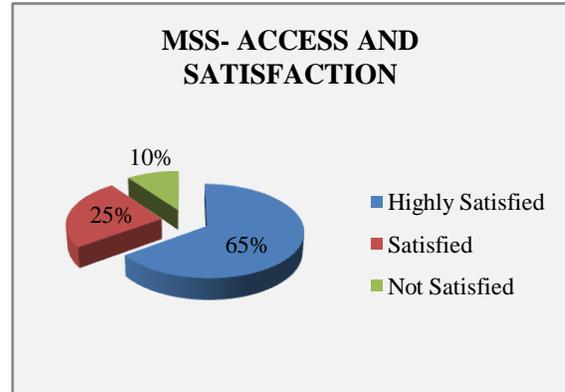


Figure 1.1

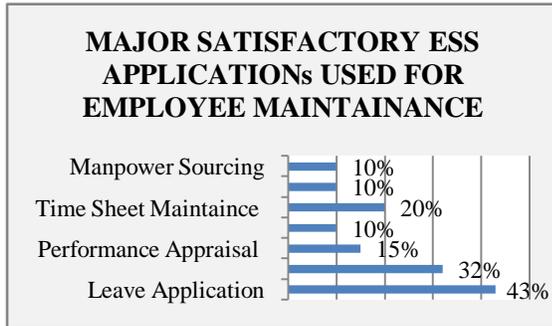


Figure 1.3

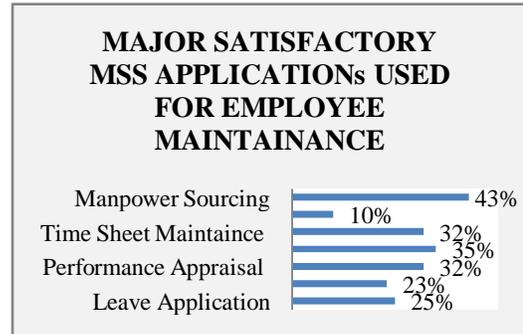


Figure 1.4

The Fig 1.3 and Fig 1.4 showcase the relative advantages of using ESS/MSS in organizations by the end users. What is significant is the end users of ESS find transactional benefits like loan/benefits etc as major advantages of the application. However for the managers using MSS Manpower sourcing (through e-reporting, dashboards, e-recruitment) modules in SAP HCM as the major advantages as it makes manpower planning at their disposal for team development. Other areas like Time Sheet compliance through Time Management module of ERP SAP HCM is found very helpful for employee governance. Also Performance Appraisal which includes goal sheet templates, replica of goal setting, tracking of performance appraisal process and feedback to be the major advantages of the ERP SAP HCM module of performance appraisal. Also the managers feel that their inadequacy of availability of time for undergoing training can be addressed by the L&D module of ERP SAP HCM which makes the e-learning 24*7 and at the work desk itself.

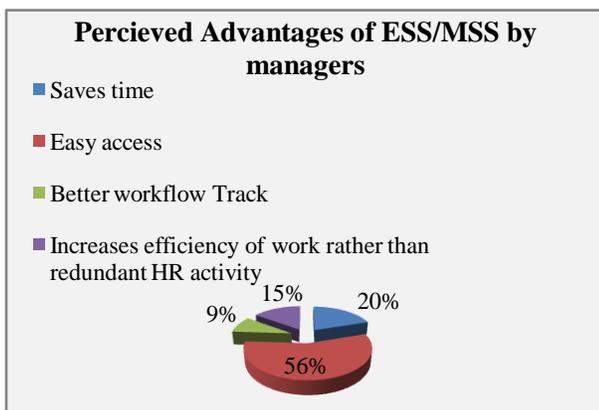


Figure 1.5

Also the end users have ranked the order in which they find the advantage of the ESS/MSS module with easy access to company /employee related data to be main advantage. This reassures that information democracy is one of the key variables for employee satisfaction and building employee moral by making task variety, task identity, task significance, decision making and work innovation as dominant work characteristics for the X-gen employees. Times efficiency with better workflow control are the other benefits that employees feel are major advantages of ESS/MSS.

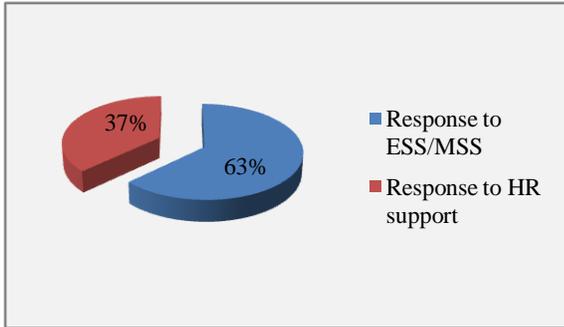


Figure 1.6

What is surprising is that HR personals (the human touch!) factor as the HR propellers use to exemplify have been strongly challenged by a techno savvy process which eludes the human touch factor in employee handling. Thus, managers and employees feel that work at one's own will and discretion also information awareness are pre-requisites for the X-Gen employees. They believe in rationality than emotional employee dilemma.

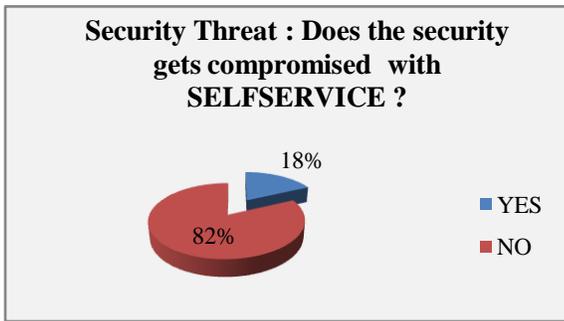


Figure 1.7

Again what is reassuring is that employees feel that security is not sacrificed with SELF SERVICE application in ERP module of SAP as the system has developed efficient security threat controls which reinforces about the robustness of SAP ERP package.

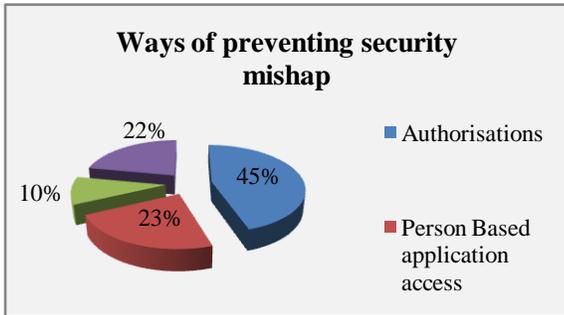


Figure 1.8

The exhibit 1.7 exemplifies the security control measures undertaken by the ERP module of SAP along with training efforts to control security leakage. Authorizations seems to be the major security leakage controls available with the SAP ERP module .Effective trainings by subject matter experts seems to be an area in which employees need to be addressed upon which seems an area of development .

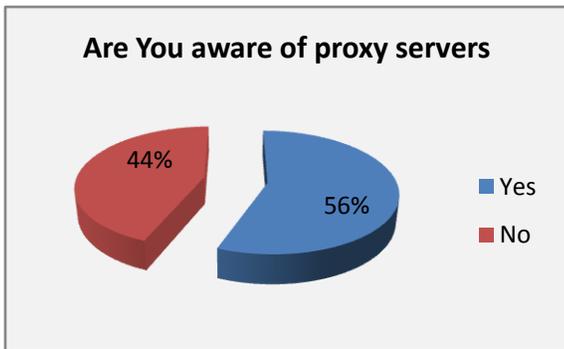


Figure 1.9

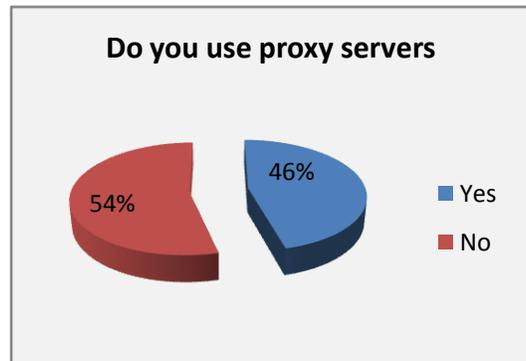


Figure 1.10

A added feature of SAP ERP is the proxy user feature .As another loophole for security mishap I addressed the respondents about their information and awareness about the same and the response was large group of users however their sensitivity of use and application is not very well known to the employees.

VII. CONCLUSIONS AND RECOMMENDATIONS

ESS/MSS is the future for X-GEN employees. Information democracy is the key essentials for knowledge workers. The major ESS benefits to employees are: Employees get to access and change their own data.

The major MSS advantages to managers are to enable Managers the ability to manage their direct employees using self services applications .Managers get to access and approve or reject timesheets and leave requests most importantly.

ERP package has been found beneficial mostly to the executives, HR professionals, and line managers as reporting and analysis options provide insight into workforce. They can identify trends at an early stage and make well-informed decisions, enabling managers to manage human capital more effectively, predict human-capital investment demands, and track workforce costs and the ROI associated with HR projects

ERP also has been beneficial across organization for Core HR and Payroll analytics and measurement :Measure and analyze typical core HR processes, such as leave application, leave approval , loan / benefit administration ,payroll, employee administration and time management.

Security seems to be least threat that the employees feel in relation to getting accessibility to self service which they feel is the need of the hour. Hence SAP ERP has been robust is supporting security and legal framework of work in organizations.

Structural Authorization has been found to be key and radical solution to information access and update by managers.

Trainings to employees on security risk detection is a very vital aspect which needs to be addressed and discussed with employees in an organization.

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