

Organizational Factors which Influence the Decision to Adopt EDI in HRM Functions: A Case Study of an Oil and Gas Company

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Abstract The use of the internet and information technology has increased dramatically over the years. There are many contributing reasons for this such as convenience, wide range of availability, cost savings and easier accessibility. The internet especially, has become almost a necessity for everyone where information can be obtained at our fingertips and we could connect to anyone in the world anytime and anywhere. With the increased use of the internet and web services, many companies have started to use web-based EDI (WebEDI). This study identifies the organisational factors which influence the decision to adopt EDI in the human resource management functions of a Malaysian Oil & Gas company. It analyses the main requirements to adopt EDI - whether it is actually based on necessity or just adopted for the sake of keeping up with its competitors. The findings from the study would facilitate the decision of whether to adopt EDI in other support divisions and serve as a basis for other organisations to make their decisions with regard to EDI implementation. This is a qualitative study where interviews, observations and document analysis are used for data collection. The findings found that the main organisational factors which influenced the decision to adopt EDI in the human resource management functions of the organisation were growing the business, cost savings and support from employees.

Keywords Electronic Data Interchange (EDI), Organisational Factors, Human Resource Management (HRM)

1. Introduction and Background of Study

The use of the internet and information technology has increased dramatically over the years. There are many contributing reasons such as convenience, wide range of availability, cost savings and easier accessibility. The internet has become almost a necessity for everyone where information can be obtained at our fingertips, and we could connect to anyone in the world anytime and anywhere.

EDI is the electronic transmission of data. According to [39], EDI is simply defined as “the electronic transmission of business data between or within firms. It is a structured, computer processable data format which permits data to be transferred from a computer-supported business application in one location to another location”. According to [28], the EDI (Electronic Data Interchange) Standard is one of the many solutions that are developed to solve the interoperability problems. Since there has been an increased use of the internet and web services, many companies have started to use web-based EDI (WebEDI).

According to [28], EDI can be used for many different functions, such as Supply Chain Management, Logistics, Human Resource Management, Financial Management and other support departments. Each discipline has studied the role of EDI from its own perspective, using different theoretical foundations, research designs, and methodologies. Reference [28], also mentioned that most of the previous researches on EDI are either on general descriptive studies, or focuses solely on the EDI adoption decision.

In this case study, the focus will be on the Employee Self Service (ESS) system, which is a web-based EDI application, or webEDI used in the Human Resource Management (HRM) functions. This research identifies and evaluates the EDI adoption factors of EDI in the human resource functions in an oil and gas company.

1.1. Problem Statement

Many companies have a propensity to adopt or implement EDI for the sole sake of competition. In certain functional areas, EDI may not be necessary at all. According to [32], “Businesses around the world continue to spend well over \$2 trillion” per annum on information technologies [7], when there is no relation between spending on information technology, profits and productivity [35]. For that reason, it is important for organisations to analyze the requirements first before deciding on implementing EDI systems. As

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Published online at <http://journal.sapub.org/economics>

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mentioned by [29] EDI has sparked the interest of many researchers from all management areas, since it has become beneficial to nearly all business functions. EDI has now become very useful to various fields in today’s competitive world.

However, there are very little studies on why EDI is being adopted in Malaysian companies [1]. Reference [22] stated that past studies focused more on large firms. There are no studies on how EDI benefits medium-sized Malaysian Oil & Gas companies, particularly in human resource management functions. The findings from the study would facilitate the decision of whether to adopt EDI in other support divisions and serve as a basis for other organisations to make their decisions with regard to EDI implementation.

1.2. Objectives of the Study

The objective of the study is to identify the organisational factors influencing the decision to adopt EDI in the human resource management (HRM) functions of a Malaysian Oil & Gas company where the research question is as follows:

What are the organisational factors influencing the decision to adopt EDI in the HRM functions of a Malaysian Oil & Gas company?

1.3. Significance of the Study

More and more companies today are widely adopting EDI. According to [32], it is not just large businesses, but even small and medium-sized enterprises today who are showing interests in having their own EDI system. However, [35] concludes that there is no relation between spending on technology, profits and productivity.

As such, this study is intended to analyze the main requirements to adopt EDI, whether based on necessary needs or just for the sake of keeping up with its business competitors. The findings from the study would facilitate the decision of whether to adopt EDI in other support divisions and serve as a basis for other organisations to make their decisions with regard to EDI implementation.

1.4. Limitations of the Study

There are some limitations in the study. Firstly, this study was a case study, focusing on one company with one particular webEDI system. The observations and results obtained from this company may differ in other companies where the processes and culture may be different. The findings may also vary in different applications, different systems or different departments [35].

Secondly, the constraint was on the size of the participants of this research. Qualitative research approach requires the number of participants to be small [30]. The company of this case study consists of more than five hundred employees, so ten participants may not be a good representative for the entire population. However, this is still acceptable in terms of qualitative approach.

The third limitation is that the participants selected for this research come from a very well education background.

Although there are diversification in terms of age, gender and positions, all of the participants possess tertiary education, with a minimum level of Diploma. As such, all of the participants are expected to be well versed in computers and technology. The findings are not obtained from any lower level group or any ordinary production staffs that are not technology-savvy.

1.5. Definitions of Terms

EDI Is defined as “the computer-to-computer interchange of strictly formatted messages that represent documents other than monetary instruments”. It implies a sequence of messages between two parties. The formatted data replaces paper documents and is transmitted via telecommunications or on electronic storage media [19].

Web-Based EDI This is also known as EDI-INT or webEDI. It refers to EDI used over the Internet which allows a company to interact with its suppliers without implementing a complex EDI infrastructure [24]. It has functions such as logging-on to a portal and doing information transaction on a website using an Internet browser. According to [24], WebEDI services only require an Internet connection. Thus, EDI has become accessible and affordable to even small- and medium-sized businesses.

2. Literature Review

2.1. Overview

Table 1. Factors Influencing EDI Adoption Decisions

Adoption Factors		Previous Studies
Globalization	Businesses are expanding around the world. So EDI is adopted for better integrity and easier information flow across the national borders.	[15]; [38]; [8]
Technology / Innovation	Data or information creation, storage, transferring, presentation, and distribution of knowledge are made easier with technology innovation. Technology inventions are becoming better and cheaper.	[15], [38]; [8]; [34]
Perceived Benefits	The benefits gained from implementing EDI are proven, and it gives a competitive advantage. Studies show that EDI significantly improves workplace efficiencies.	[34]; [15]
External and Internal Pressure	External pressure is usually from competitors and the current business environment. Internal pressure is usually from the top management	[34]; [39]
User-friendly	Latest EDI systems are becoming user-friendly, which doesn’t require extensive trainings and easier to implement.	[34]; [38]

Many inter-organisational systems are increasingly using EDI to support the strategic supply chain by way of delivering and processing business documents [25]. In terms of HRM functions, studies by [26] have proved that effective systems directly influence employees’ job satisfaction, psychological empowerment and organisational behaviors, through quick response, speed and flexibility [4].

These are the main reasons why EDI is now widely being used for HRM functions such as recruitment, hiring, training, compensation, labor relations, profile management, development of knowledge-based skills [8]. Similarly, [9] mentioned that EDI reaches more of its potential as their jobs are re-designed and skills are improved. Employees in the HRM department especially, could enhance their operating performance using these technologies. Table 1 gives a clear summary on the EDI adoption factors, supported by previous studies.

2.2. The Conceptual Framework

Figure 1 below is the conceptual framework for this study, adopted from [22]. This framework is used as a base for the literature review and scope of this study:

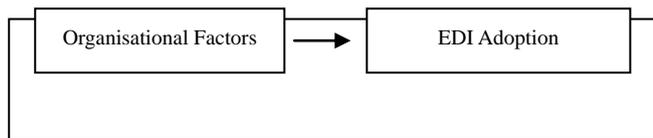


Figure 1. The Conceptual Framework, Factors that Influence IT Adoption (Adapted from: Reference [22])

2.2.1. Organisational Factors

EDI implementation is believed to be more popular among large firms. Large companies with higher number of transactions tend to get more benefits with EDI implementation, as the cost savings could be felt significantly [16]. Similarly, [6] mentioned that benefits gained by larger organisations are more obvious, as it is found to be more worth it.

EDI system might not be an obligation for small firms as their processes may not be complicated yet, and databases are not huge [13]; [6]. Further to that, small and medium sector companies are sometimes sceptical to adopt EDI due to the fear of high implementation costs. As mentioned by [27], small and medium sized enterprises are less interested in EDI as they are not willing to splurge in huge investments, dedicating costly IT resources, skilled workers, or spending for specific trainings. Besides this, their process flows may be less complex, which will lead to low utilization of the system.

Similarly, [8] mentioned that size of the firm is one of the main forces that would determine EDI adoption. Other forces include product differentiation and customer’s perception. It is normal for people to think that a company is not proficient enough if they still operate manually. On the other hand, the company has to also consider the barriers, such as the cost to be invested, distribution channels and

government policies. Reference [8] found that many companies are still excited about implementing EDI systems because information is at the heart of a contemporary business process. Moreover, information products are getting cheaper [39] as they improve in quality and it tends to have an impact on all levels of management.

There are many other elements which need to be considered in the implementation of an EDI system. As pointed-out by [39] technology needs to be understood by the initiator, which is the top management, and the end user. On top of that, importance should also be given to coordination, management, integration and education in order to make it a success. Similarly, [20] mentioned that strong technical support from EDI service providers, education and proper trainings on EDI determines its success. Further to that, [20] found that organisational structure is another important characteristic of a company, which determines the necessity of using EDI systems. Usually, a company that is decentralized requires higher involvement of EDI for better integration and standardization.

3. Methodology

3.1. Qualitative Research

According to [3], qualitative research is appropriate when there is a need for thorough analysis on the research area and three most popular research methods for qualitative research are interviews, observation and documents studies. Bowen also emphasized to consult the experts in the research field. Since this study is all about the effects of implementing an EDI system against workplace efficiency, the qualitative approach is appropriate. The researcher for this study used the three research methods as suggested by [3]. Further to that, the guidance was obtained directly from the Human Resource department and the Information Technology experts of the case study company.

Table 2. Summary of the Survey Participants Details

Employee	Position Held	Education Level	Age Group
1	Procurement Manager	Masters	25~35
2	Project Manager	Degree	45~55
3	IT cum Admin Manager	Adv. Diploma	> 55
4	Packaged Equipment Manager	Degree	> 55
5	Group Human Capital	Degree	25~35
6	Project Secretary	Degree	35~45
7	Procurement Executive	Diploma	35~45
8	Secretary, QA/QC	Adv. Diploma	35~45
9	Project Engineer	Degree	25~35
10	Designer, Boiler	Diploma	35~45

3.2. Participants' Information

According to [30] the sample for a research or case study must be selected to represent a population. Qualitative research needs in-depth investigation from a small number of communities, as the emphasizing should be on quality and not the quantity. However, the objective was not to maximize numbers but to become "saturated" with information on the topic [31].

Based on this, the sample size selected for this study is relatively small, with a reasonable size of ten (10) participants. Out of this, five (5) are Senior Managers and the rest five (5) are ordinary staffs. Qualitative research involves several key concepts and each one impacts the size of the research sample. Both of these group members use the EDI system in relation to their HRM needs and functions. The reason for selecting this group is because perceptions and expectations may differ for different work groups to find out point of views from both the working groups, on the effectiveness of the newly implemented EDI system.

3.3. Data Collection Procedures

Data was collected through interviews, observation and documents analysis. The specific data collection process took approximately three months. However, the observation started off earlier in order to get better understanding on the system and user acceptance of the system. Semi-structured interviews were used as the main data collection method.

3.3.1. Observation

In a qualitative research, observation seems to be as modest as possible, to get the natural and disrupted scenario. As mentioned by [41], the observation method blends-in naturally with the activities since the researcher works for the company. Besides having access to the system and documents, the researcher got to be in the actual situation. Observations are also less costly, and will not use-up too much time of others as in interviews. In this case, the observation technique was to monitor the usage and workplace benefits gained from using the web-based EDI for HRM, or the ESS system.

3.3.2. Documents

Fifty documents were reviewed, including books, journals, business magazines, newspaper articles, User Manual and FAQ for ESS, ESS training materials, and also electronic or Internet-based documents. Throughout the review process, the documents were uneven, where some had in-depth details and some had almost nothing. However, this method was very helpful in providing the foundation for preparing the interview questions and guiding what to observe.

3.4. Data Analysis

The researcher for this case study exercised Thematic Analysis method to analyze the data from all the three methods, observations, interviews and documents' review.

This was done by combining the overall data and breaking them down according to themes, that becomes the categories for analysis [18]. Similarly, [2] outlined the procedures for performing a thematic analysis. Collect the data, identify all data that relates to the classified patterns, combine and catalogue related patterns into sub-themes and identify the themes. Once the themes had been identified and the literature has been studied, a valid argument is built for choosing the themes and theme statements are formulated to develop a story line.

3.5. Case Study of Precious Energy Berhad

3.5.1. Background of the Company

Precious Energy Berhad (PEB) (A pseudonym) has specialized as the Brown Field service provider for the oil & gas industry since 1988. The company is purely Malaysian owned and is public listed in the main board of Bursa Saham Malaysia. Precious Energy is the parent company for its subsidiary manufacturing and service providing companies (known as the Precious Group), mainly for petrochemical and boiler industry. Precious Group is engaged in the development and production activities of the entire oil & gas spectrum as per the requirements listed in Petroleum Development Act (1974). The branches are located both on shore and off shore with three main service facilities are located both in East and West Malaysia. Its fabrication plant is located in West Malaysia and the company is known as a high quality services provider in the oil and gas industry.

3.5.2. System Overview

ESS is the abbreviation for Employee Self Service. It serves as an EDI system to ease the functions of Human Resource Management, whereby, it allows employees to access and self-update their personal details. It also holds all the employees' database in a systematic format, making it easy to view history and derive reports. This web-based application can be accessed via an Internet browser, anytime and anywhere.

ABC Sdn. Bhd (a pseudonym) is the service provider for the ESS system being implemented at Precious Energy Berhad. ABC has integrated ESS into the HRMW in application, a premier human resource management system to derive the core functions. Referring to the ESS handbook provided by ABC during the training session, some of the core functions that are currently implemented are e-Profile, e-PaySlip, e-EA Form and e-Leave. There are two more new functions, e-Appraisal and e-Claim, that will be in use soon. ESS also offers many other functions related to the Human Resource Management for future upgrades such as e-Attendance, e-Recruitment Requisition, e-Training Request and Nomination, e-Scheduling, e-OT, e-Loan, e-Post Travelling and e-Bulletin. All these functions helps to cut down most of the manual processes, and save a lot of precious time that can be used for other productive tasks and continuous improvements.

Transferring from the manual system, ESS was first implemented at Precious Energy Berhad in January 2013. However, the management had made prior announcements about the new system and started giving trainings on how to use the new system from December 2012. By the third week of January 2013, there were official guidelines given to each employee on how to use the ESS system, in the form of ESS Handbook, with a copy placed on the shared server. Based on the researcher's observation, there were some minor problems faced during the initial stage. Mostly were related to logon problems. Few staffs had received duplicated emails with different passwords, which got them confused, while the others has their birth dates and other personal details keyed-in wrongly.

The ESS system is quite flexible to adopt changes or adding new functions from time-to-time. Any new system implemented will take time to be stable and to show its Return-On-Investment. Nevertheless, the helpdesk or complaint processing speed was very poor at the initial stage. For instance, a complaint on forgotten logon password on 6th-February-2013 was only replied (password reset) on 15th-February-2013. It would have delayed many important tasks for the user and caused some inconveniences. To overcome these kinds on minor drawbacks, the management assigned a respective person for helpdesk on 26th-March-2013. There were also frequent surveys done to check on users' satisfaction towards the new system. Moreover, there were also a second ESS training session and IT awareness talk held on 27th-September-2013.

4. Findings and Data Analysis

4.1. Organisational Factors

4.1.1. Growing Business

Based on direct observations, the research found that the decision to invest came from top management. In this case, the decision to adopt the ESS was clearly initiated and implemented by the top management.

One of the interview questions were "Was it the top management's idea to buy-in for ESS? Who initiated the idea?" All the respondents mentioned that ESS implementation was the top management's decision. Answering this, respondent G felt that there was no pressure by the employees to adopt any kind of EDI, but the employees responded quite well to the announcements on implementing a new system. "Employees were not the initiator but the supporters".

According to respondent A, the business of Precious Energy has grown rapidly over the pass years. Many branches had been set up and human capital had also increased. "Precious cannot be hiring more HR personnel at each branch. Even if it does, each will branch would start implementing individual standards. Once the data becomes very huge, it becomes fragile for errors, redundant, not standardized and needs more storage space".

Another interview question asked, "Do you think the size of the company matters in the decision to adopt an EDI system?" Most of the respondents (9/10) agreed that EDI system is necessary for growing business, and it is difficult for the company to survive or compete with manual procedures. Particularly, ESS system is being very useful to the Human Resource Department in handling the growing numbers of manpower across the branches nationwide. Respondent C mentioned "investing on a system after the data becomes too huge is messy and the implementation is even worst. It is better to start during the growing stage".

On the other hand, respondent C mentioned that having a centralized and standardized system will make it easier for reporting generating, whereby, the reports can be done with just simple queries. The top management could get their reports as and when required. "There will be no need to compile, tabulate and analyze data such as total manpower, monthly payroll, overhead cost, amount of overtime and staff attendance each time...it is tedious and time-consuming. There will be also lesser travelling to the branches, as monitoring and data exchange can be done via the system".

One of the respondents, Mr.C, said that the top management's main aim to adopt the ESS system was to gain main control of the staff movement activities at all branches. Data from all the branches are standardized and centralized, controlled by the top management based at the headquarters. The same respondent also revealed that the top management has even centralized all the banking transactions done from September 2013, whereby, all transactions, salary payment and suppliers' accounts are handled by one bank only.

According to respondent E, ESS doesn't just cater for one function, but has many subfolders such as e-Leave, e-Claim, e-Training, and e-Attendance, making it easier for the top management to control. "The Group level is too ambitious... They want everything in one click, to gather the data, to extract the data, and don't want to wait for reports. ESS makes the reports faster, more accurate, and reliable".

Most of the respondents revealed that implementing ESS or any kind of EDI is not compulsory. However, it will be difficult to manage for a growing business. Having an EDI system definitely improves the operations and overall efficiencies. The company could have survived, but needed to hire more manpower at the human resource department for better management and faster processing. "It's better to implement a system while we are still growing and the data size is still convertible (respondent C).

4.1.2. Cost to Implement

The cost of investment is also another organisational factor investigated in this case. One of the interview questions asked "Was it costly to implement the new ESS system? Is the investment worth it?". Nearly all the respondents knew and replied that the ESS system was costly to invest, but the investment was worth it.

According to respondent E, "E-leave for Branch A alone costs about RM 800,000 per year, but the whole package for ESS, inclusive of training, support, setup and database

management, costs more than a million ringgit. This is for the whole group, not just Branch A... We called ABC to discuss, travelled up and down many times for them to customize the system for us.”

Many of the respondents agreed that the investment was worth it because ESS could improve the operational efficiencies significantly. This investment is assumed as one of the company’s efforts to add value and improve its competitive advantage. Adding to this, respondent H thinks that “this is not too costly for big companies like Precious... we will save a lot of other indirect costs later”. On the other hand, respondent C said that the return on investment (ROI) would not be seen immediately. It would take to see the full impact.

The interview sessions also found that ESS system, as a web-based EDI, required less setup costs. As mentioned by respondent C, there is no need to buy expensive hardware or even renew license for the software. Moreover, respondent E said “the server is outsourced and we don’t need to have a server room, or even manage the database... everything will be handled by ABC”.

4.1.3. Employees’ Support

In terms of implementation and usage most respondents agreed that the initial stage was challenging, especially for logons, and printing pay slips. According to respondent D, “we were skeptical on its performance, but the staffs had no choice, as it was the top management’s decision. Once we started using again and again, it was not bad after all”. Another respondent, Mr.I said, “In the early stages, leave records were also not updated properly, making it difficult to apply for leaves, especially during Chinese New Year season. People had to take unpaid leaves as the leave on ESS was automatically prorated”. Some respondents did not find it challenging at all, as the system was quite easy and user-friendly.

According to respondent E, initial stage had a lot of challenges, people was reluctant to change as they were comfortable enough with the old system. “It’s not easy to make people understand a new system, until everything is structured and brought online. There were many voices protesting against the system although no one sounded directly”. Respondent E also added, “Change management is important... Management cannot be getting each and every employee’s opinion on implementing a new system. We have to put in the new system by force. With a proper study and analysis, the system can be implemented first, then train the employees to adopt the system. Sooner or later, they will like it and get used to it”.

Respondent D thought that the ESS system is “challenging for those who are not IT savvy, but there were help and supports rendered from time-to-time for all the problems faced”. On the other hand, respondent E mentioned that the claim procedure also changed. “It doesn’t come to me for approval like the manual system”. In this scenario, there might be a feel for lost of control.

When asked about the support from internal IT department, all the respondents agreed that there were support as and when required. The support given is mostly for basic troubleshooting, and as the mediator between the end user and ABC. Respondent C replied, “We can only give basic support. As the designer and service provider, ABC is the best party to handle problems related to the system. Precious paid for the whole package, including training and support. So we should use them”.

5. Discussion and Conclusions

Table 3. Summarises the main findings from the study

Themes	Summary of main findings
Organisational factors	
Growing Business	<ul style="list-style-type: none"> • Need EDI system to standardize and control all the branches, and staff movements • Lesser travelling to the branches, easier to generate reports and no need to hire more manpower
Cost to Implement	<ul style="list-style-type: none"> • Costly to invest, but later saves operational costs. Challenge during transmission stage – lots of troubleshooting • No start-up costs to invest on heavy equipments or software.
Employees’ Support	<ul style="list-style-type: none"> • Change management is important – require trainings • Initial stage were skeptical, staffs had no choice. • Good support from IT department and HR staffs.

Respondents who participated in this research agreed that information technology is playing a big role in modern businesses. In this case, the implementation of ESS is considered as a technological change at Precious Energy. However, the interview findings show that it may not highly necessary for EDI adoption. The respondents feel that the operations can still go on and the company could have still survived using manual system, but the internal processes would have become complicated and inefficient. The company’s top management decided on the EDI adoption based on their requirements, investment allocations and the foreseen return on investment.

However, the study results agree with [36] the other reason to adopt EDI, which is for continuous innovation. Findings shows that Precious’s top management decided to implement ESS for improvement, gaining better control, centralization and standardization of their human capital data management. Adding on, the interview analysis found that company’s size and transaction amount are some of the important elements to be considered for adopting an EDI system. This is similar to the studies conducted by [8], [16], and [6]. Firms with higher number of transactions tend to benefit more and get faster returns on investment, compared to those with very little transactions.

Small and medium sectors are sometimes reluctant to invest on EDI due to high investment costs, need of new skills, and maintenance costs. Reference [8] also mentioned

that companies decide to adopt EDI based on barriers to entry such as distribution channel and government policies. However, one of the interview respondents, who is from an IT background, mentioned that companies should start implementing EDI while the business grows and should not have to wait until the business is too huge, otherwise it would be difficult to convert the data from paper to electronic.

Some of the barriers for EDI adoption can be eliminated by webEDIs. According to [29], IDC estimated in 2004 that 45.9% of EDI commerce revenue attributable to webEDI. Meanwhile, [15] explained that webEDI doesn't require set-up costs, user-friendly and free to use. Users just need computers and internet access, but they can't run away from the costs. Employees of Precious felt that webEDIs are way much better than EDIs provided by LAN, as they can connect from anywhere at any time. ESS is said to be very useful especially in cases of emergencies, such as printing pay slips and applying leaves when they are out of office. They do not have to carry or store these papers. Managers could also monitor their staffs' movements without being there physically.

The other barrier for EDI implementation is the culture or resistance to change, as people are too used to the old system [17]; [16]. Likewise, some respondents were reluctant because they feared their benefits will be jeopardized, since the leaves are prorated with ESS and attendance is monitored. Although most of the respondents did not like the manual system, initial stage of the ESS system introduction was challenging, because it is new.

On the other hand, this research found that older generations did not want to convert to the new computerized system. This might be due to their fear on security issues. Some of the previous studies mentioned that EDI system is very secured as each user is given a user name and password [15]. However, others felt that the security level was not examined [12]; [14].

One of the interview respondents felt that personal accounts can be easily hacked and confidential data such as salary become vulnerable when people start printing pay slips on shared printers. However, all these are due to personal carelessness and a person's irresponsible behaviour. Even manual storage may not be perfect in security if not kept safely. Further studies show that ESS system is surely enhanced with some level of security because it contains very sensitive and confidential data. In fact, ESS provides tips on how to create strong passwords and prompts users to change their passwords every now and then.

However, these issues are not critical barriers to implement EDI. According to [5], survey on human resource informants revealed that employees used computers at least part of the time. Less than 1 in 5 do not use computers in the public administration and service industries. Accessibility obstacles can be reduced by increasing the technical assistance and providing guidelines to make web-based employer processes accessible. For example, one of the respondents was initially sceptical about ESS's performance but later on, he got used to it.

6. Future Research

This study was conducted using a qualitative research method, which required very limited participants even though the sampling used for this research was appropriate according to the requirement. Future studies can try to use different research methods and get more people involved for further ideas or opinions, as suggested by [27].

Future researches should be able to act as a tool and guideline for those who are doing research, on their decision to adopt an EDI system. It should not only be useful for researchers but should also help the decision makers who wish to adopt EDI. A proper understanding of the results shown can help the management to plan their resources in the EDI adoption process in order to maximize the returns on investments.

As recommended by [40], future studies can continue to examine why EDI is being adopted, as reasons might change then. Researchers can come up with more questions regarding EDI benefits and workplace efficiencies. On the other hand, [33] suggested that more research is needed to investigate on how different approaches for the design and development of user-friendly interfaces, interactive, easy to use functions and accessibility can affect users' satisfaction with the system. A system should not be forced to use, but people must feel happy about using the system that simplifies their tasks at work.

Future studies should involve few types of systems from different types of cultures or company background. The studies could also involve different service providers to compare if the results are the same. Studies can also be conducted in different types of industry and the level of competition in the industry [21] such as service sectors and government sectors in Malaysia.

In addition, towards globalization, many businesses are expanding globally using EDI system. Future studies can be conducted to learn about the different location's culture. According to [23], various markets have differing exposure, knowledge, and comfort levels with electronic procurement.

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