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GROUP PROJECT 1

Title: Information systems implementation in businesses

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Division of work

Names	Task
Farah Mursyidah Binti Fuahaidi	Abstract, introduction, proposed solution (Problem 1)
Nurul Adilah Binti Mohd Asri	Method, proposed solution (Problem 3)
Nor Athirah Binti Abdul Rahim	Analysis & result, proposed solution (Problem 2)
Nurfatin Binti Sofian	Proposed solution (Problem 4), discussion & conclusion

Title: Information system implementation in businesses

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Abstract

Businesses have always depended on an efficient and secure flow of information. Island of information without proper organization and systemic might lead to a huge loss and damage in a business. As technology evolves, any functions in the businesses that have been done manually are supposed to be digitized in order to prevent mistakes and glitches in processing information. To date, a few companies are still to be found practicing the conventional way of working in some of their organization's functions. The purpose of this research is to observe the use of information systems to solve the problems of business organizations as well as to introduce the solution and a proper design of different information systems. This research uses two approaches to analyze data which are quantitative and qualitative. A survey is conducted to a few companies regarding information systems that have to be answered. Face to face interview sessions are also conducted by using standardized questionnaires and the answers are all recorded. Those data that are collected will be illustrated in graphs and charts. 10 companies and organizations had participated in the survey: 3 of the companies responded to have problems that can be solved by using information technology and 2 companies responded to still using manual processes in some business functions. All of the companies are recorded to implement information systems in their companies with respective reasons. In a word, every company in Malaysia has known the importance of information systems and they are widely used in various aspects of business functions. However, there are still some companies that have difficulties in implementing information technology and information systems as a whole in every of their business functions thus it probably drifts the staff to having extra tasks and hectic work to avoid making errors. To solve this problem, designing a proper type of information system is really essential in sustaining the benefits of the company.

1. Introduction

Every business company and organization utilizes information systems in their business functions to facilitate the process of acquiring information as well as to leverage the efficiency and productivity of the businesses. As technology is fully automated and implements complex algorithms, it can replace almost every manual process that previously had been done by humans thus reducing human errors and significantly boost the company's performance by saving time and money while making smarter decisions. The use of conventional ways of working in the technology era is completely inefficient because it cannot support processing big amounts of data and it might lead to information leaking and loss. Besides, information systems also develop a way to engage with customers more efficiently and help in providing good service satisfaction for the clients. Hence, information systems are definitely an ample and established mechanism in levitating business processes as well as to ease the working tasks. However, not all of the companies maximize the utilization of information systems in their business functions and processes. Some organizations are still using the manual way of working such as in transaction payment and customers' feedback. This method might lead to delays, irregularities and inefficiencies. To increase productivity of a business, information systems must be adopted into the company and must be designed according to its functionalities. In business organizations, an information system is the utmost important implementation in all aspects of businesses including sales and marketing, human resources, financial checking and information management. These aspects are vital in improving the overall performance of the company.

The Information system allows everything to be accessed easily. However, the information system also has some flaws that can be improved. There are some previous studies that observe the use of information systems in a business. Even so, these studies were undertaken without introducing the solutions to the existing information system and designing a more improved information system. This research paper intends to deliver the solutions of information systems by proposing a suitable design for a particular business function.

In this paper, we conducted a survey on some organizations regarding the application of information systems in a business. The data that are collected are from various types of organizations from different industries. **Technology industry** from NCS Global Technology, Hemmersbach Malaysia and Pan International Electronics (M) Sdn bhd, **retailing companies** from Tesco, Ecoshop, Mr. D.I.Y Sdn bhd, Happy Home homewares and 99 Speedmart. Lastly we also observe **the Wellness and Personal Care industry** which are Shaklee and Alisya Golden Cosmetics Sdn Bhd. The reason the data collection is done with various companies is to show that information systems are included in any type of companies ranging from the smallest scale to the largest scale.

2. Literature Review

Information system has been implemented everywhere in the industries as it offers a huge benefit to ensure the productivity and efficiency of the businesses. Below is the comparison of four information systems from four different industries.

2.1 Comparison of the Previous Works

Table 1. Comparison of Previous Works

No	Author & Year	Problem	Goal	Area (Business, healthcare, etc.)	Type of Information System	Strength	Weakness
1	SHIBIN BABUR AJ PAUL, 2016	Difficulty in collecting, storing, altering and retrieving data regarding transactions within the organization. A lot of mistakes could be done by doing all the processes manually by employees.	Come out with a system that is handy for purposes such as payrolls, maintain employee records and payment of employees. A system that helps in maintaining the details of the suppliers, the quality and quantity of their products and lastly the invoice amounts. This system helps to minimize the difficulty that the employees could face by doing things manually.	McDonald - Food and beverage industry	Transaction Processing System	The information held with the transaction processing system is safely kept and well protected because it contains information regarding money which is very precarious to the organization. It also helps in capturing and analyze information that is generated during restaurant's day to day transaction	The obvious weakness would probably power. If power fails, obviously it brings down almost all the electronically managed processes within the restaurant. So this will negatively affect from the payment system in the front counter
2	Nafiseh Hajrahimi, Sayed Mehdi Hejazi Dehaghani and Abbas Sheikhtaheri, 2013	The Health Information System is considered a unique factor in improving the quality of health care activities and cost reduction, but today with the development of information technology and use of internet and computer networks, patients' electronic records and health information system have become a source for hackers.	This study aims at checking health information security of three selected medical centers in Iran using AHP fuzzy and TOPSIS compound model. To achieve that security measure was identified, based on the research literature and decision making matrix using experts' point of view	Healthcare	-Information Security. -Health Information System	Information security enhances the patient confidentiality and leads to the public interest for EHR use. Encryption is introduces as a powerful tool to support the storage and transfer data	Advances in information technology and its compatibility with the healthcare industry have led to progress in health care,higher quality,health care lower cost and advances in medical science. But they have led to increased potential information security risks. Also the growth of digital medical records has made the medical identity theft as a magnet for hackers

| 3	Dr. Jozsef Karpati, (n.d)	Public administration, especially in the Eastern or Central European countries was suffering from fragmentation, unclear responsibilities and insufficient information flow in the hierarchy of the organization. This situation resulted in several attempts and results at different public administration organizations in Hungary as well, as more and more decision-makers realized in administration, that a more effective tool is required for better operation.	The purpose of the Hungarian Central Statistical Office (HCSO) Management Information System is to be a public administration organization that was committed to giving a transparent overview of its operation for all employees and has no financially confidential information which is the case mostly in the private sector.	Public Administration	Management Information System (MIS)	The MIS becomes the automatic creation and publication of reports with the unified format and fixed content, a platform to reach the detailed database and analyze it, the possibility to monitor key processes in a transparent way and distribute information in a very wide circle through the portal. Therefore, the regular monitoring of the operational information is mostly automatized and embedded into regular HCSO processes as a process quality aspect itself.	Face several challenges during the automation process of the different data sources, since data were on heterogeneous platforms ranging from Oracle to Microsoft through unique developments. The essence of these data had to be integrated into one single database, which is an SQL database with OLAP functionality. Experiments on how different data could be presented in the best way that needs to be done.
4	Mohammad Keshvari, Ali Reza Yusefi, Abbas Homauni, Roudabe Omidifar, and Samin Nobakht 5, 2018	. Identifying barriers and challenges in the use of hospital information systems can be the first step for better information management and better implementation of quality improvement and clinical governance plans	The aim of this study is to investigate the barriers for the using of information systems in hospitals	Healthcare institution	Hospital Information System	The use of hospital information systems (HIS) can increase efficiency and effectiveness of care and cost saving. In addition, these systems improve the readability of data recorded, user satisfaction, and reduce medical errors. Considering that information technology creates a great potential for improving quality of care, efficiency and effectiveness of personnel, particularly in hospitals and medical centers.	Multiple systems of data recording (an organizational factor) are a reason for the lack of common definition of hospital indicators. Multiple systems of data recordings decrease the accuracy of data recording and also need more human resources. In addition, due to the shortage of human resources (a hardware factor), best use of multiple systems of data recording is difficult. Shortage of human resources results in collection of crude data and improper data analysis.

3. Method

The method chosen for this research is questionnaires. This is a mixed-method that includes qualitative and quantitative methods. The qualitative method is the answer to open-ended questions. Meanwhile, the answer to likert-scale questions will be used for the quantitative part. The aim of the number of respondents was about 20 at the beginning. However, the survey had been completed by 10 companies. The organizations were targeted to be from different industries. Therefore, organizations chosen are from 3 different fields consist of technology industry from NCS Global Technology and Pan International Electronics (M) Sdn bhd, retailing companies from Tesco, Ecoshop, Mr. D.I.Y Sdn bhd, Happy Home homewares and 99 Speedmart and the Wellness and Personal Care industry which are Shaklee and Alisya Golden Cosmetics Sdn Bhd. All of these surveys took about 3 weeks to complete where it began on 13th March 2020 and ended on 2nd April 2020. The entire process for the data collection had been done by using 2 approaches. First, face to face interviews among selected few companies at USM Karnival Ekspo Kerjaya on 13th March 2020. Second, most companies completed the questionnaires by Google Form that had been sent to them by email. The purpose of Google Form for the online approach is easy for the respondents to answer. In addition, most of the respondents are dominated by 8 females and the rest are males. Their level of education is 3 of them are diploma, 5 graduated as degree and one completed stpm and master for each respectively. Briefly, all the data collected are analyzed and converted into useful graphs, charts and statistics by using Microsoft Excel. The information collected helped in designing the information system for companies that have problems with information systems.

4. Analysis & Results

Based on the survey, all of the companies are using an information system in their organization. The use of information systems gives a lot of benefits to the organization and business firms to carry out and manage their operation, interacting with customers and suppliers and competing in a marketplace. Based on the surveys, other reasons for implementing information systems are in Table 1.

Company that use Information Syatem
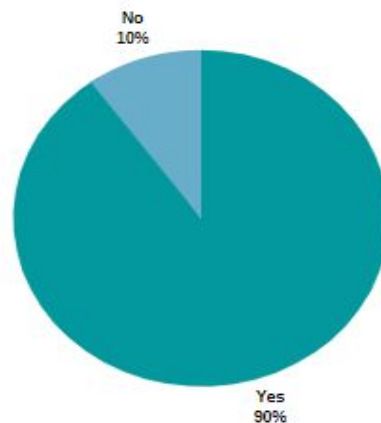
The reasons for using information systems in organizations.

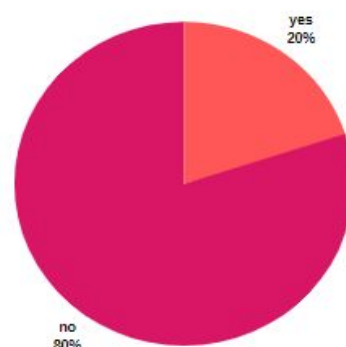| REASONS |
|---|
| To improve business process |
| Automation speed up process |
| To increase work efficiency and productivity |
| To facilitate the purchase and delivery of goods |
| All data and information are well organized by using information systems, tasks become easier to manage. |
| Reduce manpower and save up more profit. More systematic |
| To ease stock calculations |
| To know customers needs |
| Using system POS to send the item from customers buying to HQ department |
| Easy to track the stock , less time consuming |

Table 1

Beside the use of the information system in the survey, there are about three responses that faced a problem and required the use of information technology to manage the process in their business compared to the other eight responses that are able to use the information technology to manage their business. Information technology is very useful for transmitting, storing, manipulating and retrieving all kinds of data in order to facilitate all business matters.

As many as two companies are still using the manual process for the data management in their organization and need to be computerized to reduce the errors while the rest of the responses are using fully computerized data management. This method are better than any manual process as it minimizes errors and redundancies which resulting in higher efficiency.The reasons that the company still using the manual process and should be computerized are stated in Table 3.
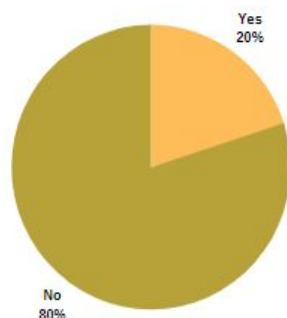
The problems faced by the three responses which need to be solved by using information technology includes:

PROBLEM
source of raw material
customers payment

Table 2

The problem or reasons that still use manual processes and feel it can be computerized.

REASONS
feedback from customer, Payment by customer
Bulk document to be uploaded to individual accounts

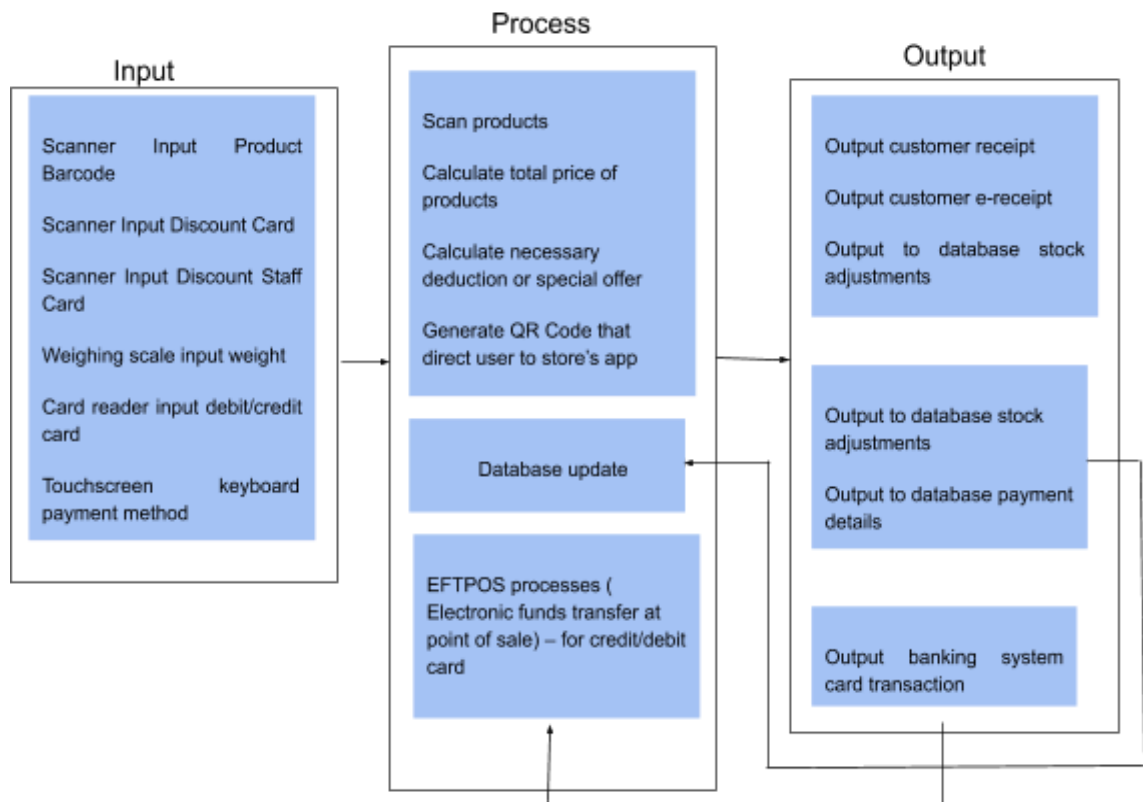Table 3

5. Proposed information system and Strategies behind it

I. **Problem 1: Customer Payment**
   Company/s: Happy Home Homeware, Mr DIY
   Solution proposed: Self Check-out system
   Aspect: System development

Based on the survey conducted on the respective companies, receiving customer payment is a problem that can still be done manually. We perceive this problem as difficulty in receiving cash payment. Because of that, we propose a cashless-based system called Self Check-out system. This system is an automated machine where customers are allowed to process their own purchases from a retailer. When the customers want to checkout, they have to go to the check out machines and scan their own purchases using products barcode scanner by themselves. After scanning all items, the system will calculate the total price of the products and perform necessary operations. Payment methods will pop up on the screen and the customers can choose their own payment method whether to use a gift card, debit/credit card or QR scanner. For gift card and debit/credit card, the process is just straightforward. But for QR scanner, the system will automatically generate a QR code which embedded the total price of purchases and the customers can opt to scan it where it will direct them to their company apps. The payment is then made through the application.

Input

- Scanner Input Product Barcode
- Scanner Input Discount Card
- Scanner Input Discount Staff Card
- Weighing scale input weight
- Card reader input debit/credit card
- Touchscreen keyboard payment method

Process

- Scan products
- Calculate total price of products
- Calculate necessary deduction or special offer
- Generate QR Code that direct user to store's app
- Database update
- EFTPOS processes (Electronic funds transfer at point of sale) – for credit/debit card

Output

- Output customer receipt
- Output customer e-receipt
- Output to database stock adjustments
- Output to database stock adjustments
- Output to database payment details
- Output banking system card transaction

Components	Description
People	Customers of the retail companies
Hardware	Barcode scanner, Credit/debit card reader, Touchscreen keyboard
Software	Oracle for database
Data	Input of the system such as input product barcode
Policies and procedures	Information security policy, Access control policy
Strategic business objectives	Customer and supplier intimacy, Operational excellence, Survival of the fittest, Competitive advantage

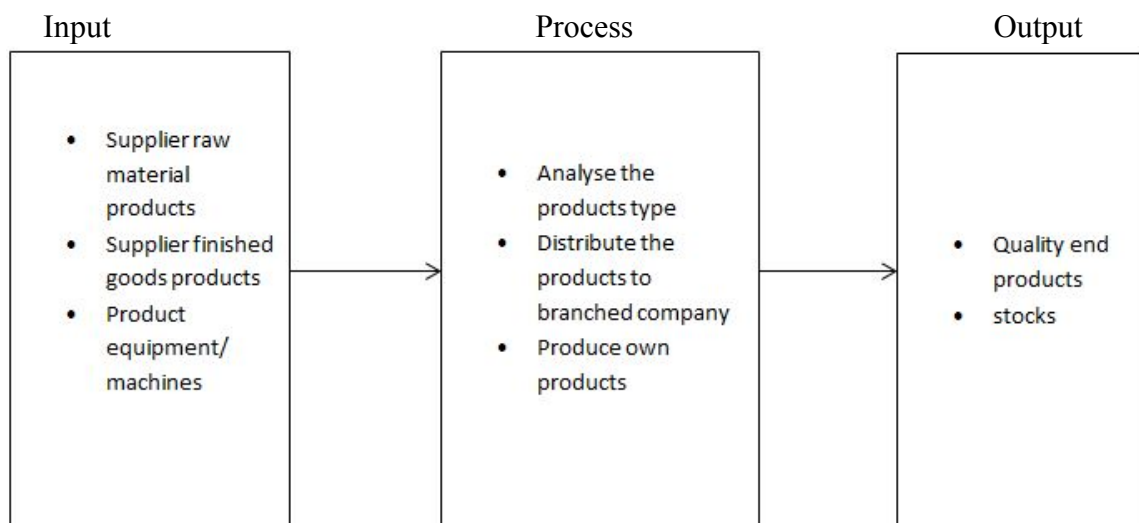| Strategies business objectives	Description
Operational excellence	Improve in handling sales of company by using online approach
Customer Intimacy	The ease on shopping and paying can attract new more customer attraction and build customer loyalty
Improved decision making	Report on sales can be generated in a proper and better understanding. Middle manager can manage well company finance performance
Survival	Cashless environment being implemented

II. Problem 2: source of materials
Company: Alisya Golden Sdn Bhd
Solution proposed: Inventory Management System
Aspect: Database

From the survey, Alisya Golden Sdn Bhd was stated that the problem faced by their company is to manage the source of raw materials. So the proposed solution that can be implemented to their organization is Inventory Management System. This system is an important component to product-driven business. This system is mainly focused on the purchasing the raw materials or stock from the supplier and also inventory control.An optimized inventory management can lead to better purchasing practices and stronger inventory control. Suppliers become very important in the business and the source of raw materials because without their products and materials ,sales doesn't have anything to sell and business comes to halt over time. The system will automatically store the stocks in the database and will be organized automatically in the database.

Input	Process	Output
• Supplier raw material products • Supplier finished goods products • Product equipment/ machines	• Analyse the products type • Distribute the products to branched company • Produce own products	• Quality end products • stocks

Components	Descriptions
People	Employees
Hardware	ipad, laptop,server
Software	oracle for database,java
Data	input stocks from suppliers
Policies & Procedures	Access control policies,management data policies
Strategic Business Objectives	Customer and supplier intimacy, Operational Excellence.

Strategic Business Objective	Description
Customer and supplier intimacy	Information systems have enabled suppliers to have access to the production schedule of the firm and notice when to have materials ready.
Operational excellence	computing the data can reduce the data redundancies and inconsistency and become more efficient.

III. **Problem 3: Feedback from customer**
Company: Mr DIY
Solution proposed: Feedback Management System
Aspect: Database

As resulted in the questionnaires, Mr DIY company had been faced with a problem which is the management of feedback from customers. They state this matter as a problem that they identified to have potential can be computerized. In regard to that this organization manages its customers' feedback by using manual processes. It is hard for them to monitor it well because some of it may be miss allocated or missing, the feedback data are everywhere and too much feedback need to handle by manual way. Therefore, a proposed solution had been designed to solve this problem. It is Feedback Management System that using Management Information System (MIS) as the type of information system. This system relay on database technology. Database plays an important role in handling all customers' feedback because the database itself is used to store a large amount of data and can generate a useful report for middle managers. The problem solved start with all the feedback needed by DIY company must be distributed and completed by customers through online. Any form of feedback is accepted as long as it automatically connects with the MIS system. Then, all the data will transfer to the database. It will keep the data safe and can be accessed by middle managers especially. Briefly, this system keeps track of all customers' feedback all the time. It gives access to middle managers to view data instantly with better performance. The report can be done easily for them if they wish because it assists them in monitor company current performance and alerts with the current trend of business.

Input	Process	Output
Customer: - -Feedback -Survey	-Customer fill up their opinion -Analyze data -Categorize data by group	-Graph -Chart -Statistics

-Rating -Review -Poll	-Update data	-Report

Components	Descriptions
People	Customer, middle manager
Hardware & software	Smartphones, laptops, database, server
Communication networks	Internet, intranet
Data resources	Any kind of feedback form from customer such as survey, review, rating and others
Policies & procedures	Information security policies, information management policies, access control policies, remote access policies

Strategies business objectives	Descriptions
Customer intimacy	Know weakness or things that can be improved efficiently by the DIY company. Build trust, loyalty and make customers return.
Improve decision making	Provide middle managers with reports on the company's current performance

IV. **Problem 4: Bulk document to be uploaded to individuals account**
  Company: NCS Global Technology Sdn Bhd
  Solution proposed: Document Management System (DMS)
  Aspect: Database

From the data collection that we analyze, the problem faced by the NCS Global Technology Sdn Bhd is that they are still using manual processes for data management in their organization and it needs to be computerized to reduce the cost and the errors. As we know, the reason why this organization still uses manual processes is because they have a bulk of documents that need to be uploaded to individual accounts. To solve the problem, we proposed designing a Document Management System(DMS). This system is a system used to receive, track, manage and store the documents and reduce paper. Most are capable of keeping a record of the various versions created and modified by different users. This system is designed to keep important data into a database and make them available when demanded for document support. IT also helps this organization by efficiently and systematically controlling the creation, maintenance and disposition of records, including processes for maintaining an information of document and business activities. By using this system, it integrates all essential document management and advanced search into one easy to use solution by improving business decision making and productivity through shared practices.

INPUT	PROCESSING	OUTPUT
- Document information - Staff information - Format document information	- Save and upload the document - Send the document to the staff - Authorize and verify the document	- View found document list - Print the document - View document in each staff - View document in various format

COMPONENTS	DESCRIPTION
People	any person with the permission to access this DMS. That is anyone who creates, receives, reviews and uses records stored in the system. This is the standard level of access that most employees or system

	administrators in this organization will possess.
Hardware	electronic devices such as server, fax, e-mail, smartphones, laptops and desktops.
Software	web portal application and Document Management System (DMS) software.
Communication Network	computer network like FTP server and VPN access to a file server.
Data	Input of the system such as document information.
Policies & Procedures	access control policies, data policies, remote access policies, user account policies, user access to data policies

STRATEGIES BUSINESS OBJECTIVES	DESCRIPTION
Operational Excellence	Document Management System in one of the enterprise technologies most responsible for introducing organizations to the cost efficiency and security. The Document Management System easier and fast to access customer related data and effective in customer services. Operational management and administration use the system to track and control the document distribution. This system links with data workers and all the employees in the organization.
Improved Decision Making	This system created the most efficient and improved the workflow between internal operations along with better communication facilities. This system improves decision making processes by reducing the clutter associated with mountains of physical paperwork.
Competitive Advantage	Document Management System is the system that transitions to a digital document management

	solution for faster searches, automated workflows that improves productivity for employees and companies can free up physical storage space and reduce off site storage expenses to their bottom line. FileHold Systems develops, sells and supports enterprise grade document and record management software for security concerned larger organizations.
Survival	This company is using Document Management System(DMS) to embrace digital technologies and going paperless as a matter of survival. Going paperless is not just good for the environment. It can also help companies cut costs, streamline their operations and become more competitive. In order to remain and survive in this matter, mostly all companies had no choice to use DMS to manage the business.

Based on data collection that we analyze, we proposed to design types of information systems (IS) for the problem that faced by respondents. This is because to support operational and strategic activities and also to achieve competitive advantage in their organization. There are the type of information system (IS) as shown below:

| PROPOSED SOLUTION	TYPE OF INFORMATION SYSTEM (IS)	DESCRIPTION
Self -Checkout system	Transaction Processing System (TPS)	This system records all transactions that had been made through real-time processing. Ease customers' payment method and help the middle manager on monitor company finance better.
Inventory Management System	Management Information System (MIS)	This system will record all the raw material or stock from suppliers.It can evaluate and set expectations to access the supplier history, monitor supplier performance and also purchase with ease.

Feedback Management System	Management Information System (MIS)	This system keeps track of all customers' feedback all the time. Give access to middle managers to view data instantly with a better performance
Document Management System (DMS)	Management Information System (MIS)	This system keeps, track and controls the document distribution in the standard level of access that most employees or system administrators in this organization. It also keeps important data into a database and make them available.

6. Discussion and Conclusion

From the data collection that we analyze, the problem that faced by the respondents or the reasons that they still use manual processes and feel it can be computerized as shown below:

| COMPANY	PROBLEM
Alisya Golden Sdn Bhd	Source of raw materials
Mr DIY Sdn Bhd	Feedback from customer and payment by the customer
Happy Home Homewares	Customer payment
NCS Global Technology Sdn Bhd	Bulk document to be uploaded to individuals accounts

Success factors are variables or circumstances necessary to enable a positive outcome for a business program or strategy. According to the survey, most of the respondents already fulfil the success factor according to their company. The success factors organization, environment, technology, people, policies & procedures and data /database.
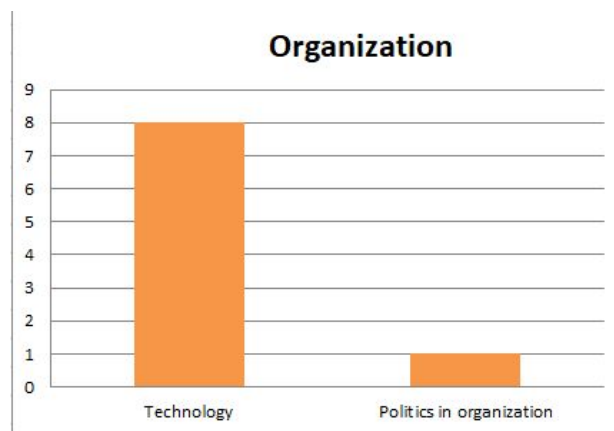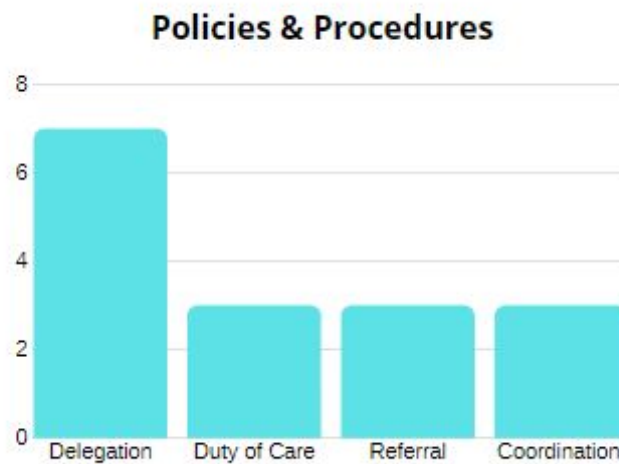
Organization

The success factor of an organization shows that most of the respondents strongly agreed with the technology aspect in an organization compared to the politics aspect in organization.
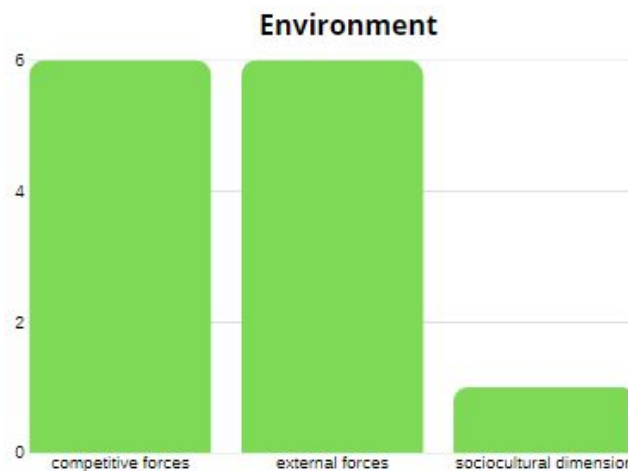

Environment

The success factor for the environment stated that competitive forces and external forces aspects state the highest votes as the respondent are strongly agreed with that compared to the sociocultural dimension in the environment.
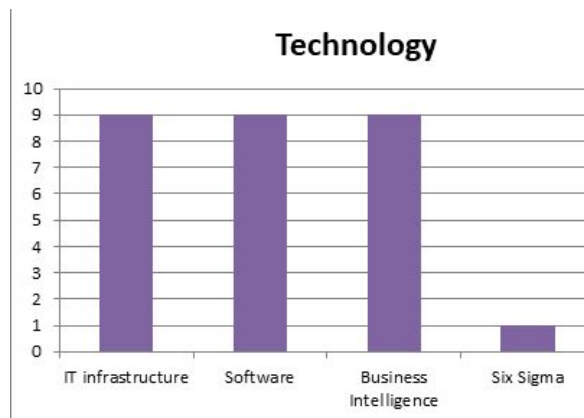
Technology

The success factor for Technology results as the IT infrastructure aspect, Software aspect and Business Intelligence aspect give a huge impact toward the technology as many respondents strongly agreed while the Six Sigma aspect which is not suitable to support the technology.

Policies & Procedures

The success factor for policies & procedures shows that the delegation is the most important in the organization. For the other three aspects which are duty of care, referral and coordination/networking with external agencies are not important compared to the delegation as it is more related to the policies and procedures.
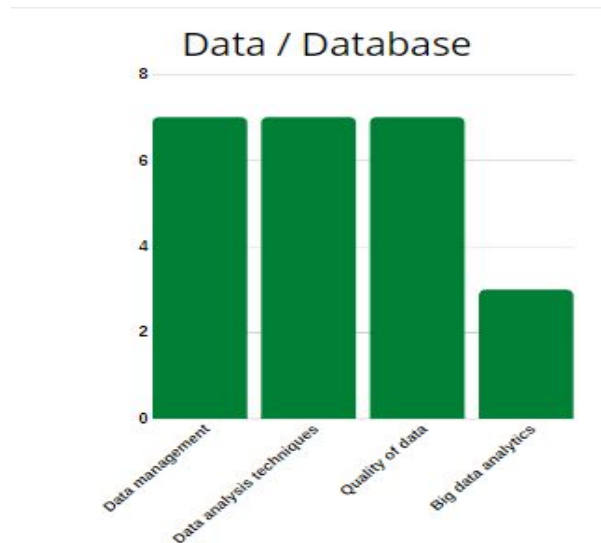
Data / Database

Database is very related to the information system so for the success factor for the data/database, it shows that data management, data analysis techniques, quality of data are highly voted by the respondents and become strongly agreed as it is most related to the success factor while big data analysis is also contributed to the database factors but less than the other three aspects.
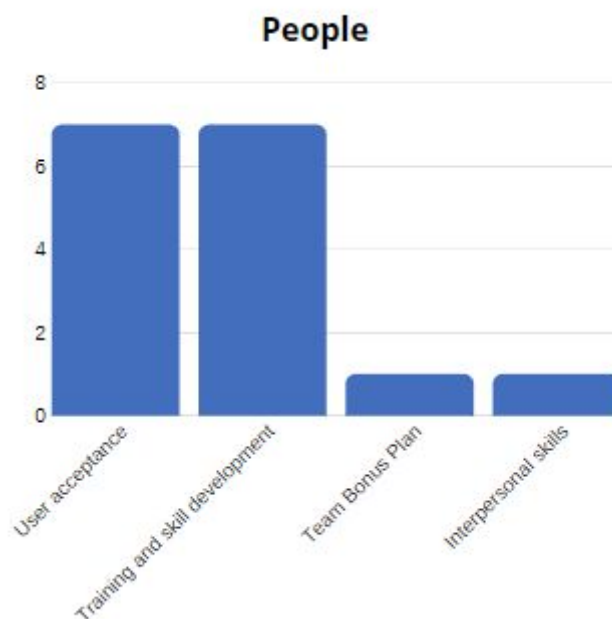
People

The success factor of people shows that training and skill development, user acceptance is strongly agreed by the respondents as it is necessary for the positive outcome in the organization, besides team bonus plan and interpersonal skills are also agreed by some respondents but it is still lower than the other two aspects.

In conclusion, uses of Information System (IS) are the means not the end of the process. It is a powerful tool in the hand of management, which when deployed appropriately can bring dramatic change in the way an organization performs and achieves its objectives. IS are designed to improve the overall efficiency and effectiveness of a process. The information systems speed up the process and reduce the time by removing non-value adding steps in the

operation. Appropriate utilization of information systems benefits both the organization and its employees and its stakeholders. But when misapplied, they can waste tremendous amounts of time, effort, and money.

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