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Diploma Thesis

UX OF SAP FIORI AND SAP GUI

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DIPLOMA THESIS ASSIGNMENT

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Systems Engineering and Informatics
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Thesis title

User experience with SAP Fiori and SAP GUI

Objectives of thesis

The main objective of the thesis is to compare a new graphical interface Fiori and desktop based interface SAP GUI for SAP S/4 HANA information system.
The partial goals of the thesis are such as following:
- To create an overview of the current state of the art in user experience in ERP
- To make a case study based on empirical comparison between SAP Fiori and SAP GUI on a set of scenarios – To evaluate impacts on operator's performance and formulate recommendations for the business users.

Methodology

The theoretical part of the thesis will consist of a literature review of all relevant literature related to user experience in ERP and usability testing methods. In the practical part, the empirical test will be made by testing both interfaces and tracking time and user responses to the interface. Further, a catalog of criteria for UX of SAP system will be proposed and the criteria will be evaluated.

The proposed extent of the thesis

60 – 80 pages

Keywords

User experience, usability, SAP, Fiori, SAP GUI, S/4 HANA, ERP.

Recommended information sources

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DECLARATION

I declare that I have worked on my diploma thesis entitled: User Experience With Sap Fiori And Sap Gui, by myself and I have used only the sources mentioned at the end of the thesis. As the author of the diploma thesis, I declare that the thesis does not break copyrights of any their person.

In Prague on 06.04.2020   _____
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"In the name of God, the Most Gracious, the Most Merciful".

I would like to thank Ing Milos Ulman Phd for his support and guidance throughout the successful execution of this thesis. I would also like to say thank you to my wife Rahina Hasheem, my Dad Alhaji Mohammed Salisu Issa, my mum Hajia Aliya Issah, all my siblings Humaiya Issa, Phildaus Issa, Fahik Issa, Zainab, Ashruf Issa and everyone who assisted in diverse ways and also contributed to the successful end of my studies.

UX OF SAP FIORI AND SAP GUI

Abstract

This thesis attempts to explore the current overview of user experience in enterprise resource application, thereby finding out if there is a difference between the new state of art user interface of Sap Fiori and the traditional SAP GUI and offer recommendation to business users.Four case studies were created on material management and human capital management both to be tested on the old GUI and the new simplified user interface and the test was undertaken at a usability Lab. Primarily, 12 participants were involved in the study and Tobii eye-tracking application was used in capturing the segment duration, Heat maps as well as Gaze plots. An online questionnaire was created to solicit participants' view of the perceived usability of both UIs. The study concluded that, indeed movement from the old user interface has seen some improvement in the new simplified user interface compared to the old user interface.Additionally,the perceived usability of the new interface appeared to be in conformity of modern usability criteria. The new simplified application will offer much better experience compare to the old user interface.

The study recommends businesses to take advantage of the new user interface to improve the level of productivity and efficiency of its staff.

Keywords: SAP, User Experience, Usability, Fiori, GUI, User Interface.

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SAP   SYSTEM APPLICATIONS AND PRODUCT

GUI   GRAPHICAL USER INTERFACE

ERP   ENTERPRISE REOURCE PLANNING

HANA   HIGH PERFORMANCE ANALYTICS

HCM   HUMAN CAPITAL MANAGEMENT

MM   MATERIAL MANAGEMENT

UI   USER INTERFACE

UX   USER EXPERIENCE

AUI   ADAPTIVE USER INTERFACE

SCM   SUPPLY CHAIN MANAGEMENT

FM   FINANCIAL MANAGEMENT

WMS   WAREHOUSE MANAGEMENT SYSTEM

PLM   PRODUCT LIFE CYCLE MANAGEMENT

CRM   CUSTOMER RELATIONSHIP MANAGEMENT

1 Introduction

The evolutionary pace of technologies has been shaping the design of Enterprise Resource Planning (ERP) systems in recent years. Nowadays, ERP system customers are evaluating various other features besides systems' functional advantages, such as simplicity even if the data is complex, high class user experience, availability everywhere on every device, cloud-based services and mobile approach (Moon, 2007 & Washbon, 2016).

The ERP industry is vibrant and rapidly changing environment. Since its early days, most companies within this industry have relied upon continuous development of new and better technologies to survive. The aim of ERP system is to integrate and manage different business process with information technology. The general strategy of these firms has been to increase their market share by coming out with new features in their software applications. This is because, inventing new feature allows them to gain competitive advantage and differentiate them from other competitors.

According to Norman, (1999) the result of this technology and feature driven race are the very advanced products, with an ever-increasing complexity, constantly hitting markets as "faster, more powerful and with more features than the current ones". But in their quest to improve products by adding features merely, make them harder to use by end-user.

Although technology and features of application are important parts but it no longer makes much different. This is because end-users of modern application demand more experienced related factors such as ease of use, convenience and reliability. Meanwhile, increasing competition among companies within the ERP are driven towards new strategy, which is designed to put the end-user needs in prime focus.

2 Objectives and Methodology

2.1   OBJECTIVES

Technology is constantly developing and has become inseparable part of the existence of modern-day business. Organizations use multiple devices in order to be able to connect to the digital world as well as improve their business process. As a way of improving user experience, ERP firms are focusing on the user interface and user experience of applications in end user's environment and making the interaction with them more natural. The attention is now shifting to user interface and user experience of software applications. The topics of user experience SAP FIORI AND SAP GUI form the scope of this study.

The main Objective of this thesis is to compare the new graphical interface of Fiori and desktop-based interface SAP GUI for SAP S/4 HANA information system. The specific objectives will be as follows:

1. To create an overview of the current state of the art in user experience in ERP.

2. To make case study based on empirical comparison between SAP fiori and SAP GUI on a set of scenarios.

3. To Evaluate impact on operator's performance and formulate recommendations for the business users.

2.2   Methodology

Since the purpose of the thesis is to compare the new graphical interface of Fiori and desktop interface of SAP GUI. The empirical test was done by testing how set of participants experience both interfaces and tracking time through a design case study.

3 Literature Review

The literature review section of the study covers the following subjects; brief history of SAP AG, Enterprise Resource Planning, User Experience and Usability Testing Methods related studies.

3.1 SYSTEM APPLICATION AND PRODUCT (SAP)

In 1972, a group of five entrepreneurs in Germany had a vision for the business potential of technology and founded one of the world's dominant software vendors-SAP. The SAP was the first ERP company to enter the marketplace and as a result, they became the leading company in ERP industry. Their first system into the market was the R/2 and R/3 systems, which generated higher profit and made the company the foremost leaders in providing all-in-one business solutions for a diverse range of industries. The total number of their employees were more than 76.000 people (doubled the employee number in 2006) in more than 130 countries (tripled the regional offices number in 2006). The headquarters of the company is in Walldorf, Baden-Württemberg, and has over 335,000 customers across the world (SAP SE, 2016).

Over the years, the company has become the leading provider of enterprise resource planning solutions for large and small and medium size enterprises.

The sap software applications provides stability, adaptability, higher speed of change, lower cost of change, and much easier upgrade to new releases with configuration facility to the specific customer needs. The major software package that SAP offers is the R/3 system. The R/3 system provides businesses with speed and agility in building, deploying and maintaining business solutions. The system R/3 is written in ABAP/4 language and is built in 12 modules. The total number of their modules is 26(SAP Module List, 2016). Most of their customers believes the company stands for a collection of quality application which offers enormous solution to their business needs. Once a customer purchases a package of solution, it comes along with a mix of various application modules such as Sales and Distribution, Human Resources, Material Management and so on. This is called "standard delivery". In order to run efficiently and effectively customers are allowed to make changes specific to their needs. Customers can modify "standard" applications to align with their business on timely basis. The system of applications of SAP product are flexible, thereby allowing the customers to make changes that suits their specific needs.

Originally, ERP system design has focused on execution of transactions rather than its usability relevancy over-time and as a result has been struggling with an increasing changing environment of cloud mobile technology. The company has been using graphical user interface for all its products, which has become a fundamental problem for a very long time. Then, in 2013, there was a breakthrough with the launch of SAP Fiori in order to align SAP applications to the rapidly technological changing environment and be able to satisfy the ever-changing needs of their consumers. The application can be access through desktop, tablet and mobile with modern user friendly interface. The company has been in fierce competition with other ERP vendors when it comes to developing excellent user experience that offers less complex and interactive interface to their customers.

Currently, SAP user experience strategy places much premium on their consumers and partners to come up with their own design and carry it out through educational platforms and tools, which will give them a less complex user experience.

3.2   SAP S/4 HANA

SAP HANA stands for SAP high performance analytics platform. It was developed by the company in 2010, and was developed with an in-built columnar database. Under columnar database, all values are stored together, which in turns make it easier to access individual elements compare to the traditional raw-store database. This type of database uses a unique way to store data efficiently and makes operations relatively faster. SAP HANA will usually store all data in a memory which enables CPU to run faster in the accessing and processing of data. SAP Hana offers considerable computational prowess as a result of its multiple CPUs boards across all servers which run at the same time. The application offers a powerful avenue to model business needs. These needs may vary from a simple calculation to a complex one in a scale-out environment. (SAP SE, 2016).

3.3   SAP GRAPHICAL USER INTERFACE

The functionality of this interface is similar to a web browser. But present its content differently. The interface take cares of session related information from the client side, which in essence reduces the communication needs on the server. It offers SAP applications to react quickly to it user's input. In essence, it offers a combined center to all SAP applications functions. According to Zairi et al (2000), they describe the main functions of SAP graphical user interface are as follows:

- ➢ Presenting all data to end-users.
- ➢ Creating all GUI components, such as windows and buttons, and taking care on all user inputs.
- ➢ Communicating all user requests and input to SAP applications across all the network.

3.4   SAP FIORI

The SAP GUI was deemed to be a powerful application when first introduced to users. However, technology has since been evolving in fast changing pace in the world. Certainly, technology has become a pivotal part of everything we do presently. The world today is a society of smart phones, which provides an avenue to accessing diverse social networks at a go on a button click. As a result, users of SAP products are constantly getting accustomed to and the taste for more improved application-user experiences. SAP, realising the need to come up with updated task-based application that would meet current market demands by easily helping end-users in completing their job with ease and able to work on any device at any place, in May 2013, launched SAP Fiori as its new user interface.The application was created base on a framework called UI15 and was built on top of HTML5, which places much premium on user interface designed with user related applications. The company created a responsive and response user interface of different screen sizes and can be access on any device as well as all browsers which are compatible with HTML5.The HTML 5 was adopted by SAP because it offers easy access across desktops, tablets and smartphones. The FIORI applications provides increased user productivity by automating and simplifying on any device as well as offering an appealing user experience designed on major activities.

It also provides avenue by easily capturing enterprise data, thereby offering compliance and data quality. The Fiori application has been built from the perspective of the user and designed to offer increased functionality.

Figure 1 Fiori user experience as seen on type of devices (mathew,2015)

3.4.1 SAP FIORI UX Design Principles

There are design principles that comes along with SAP Fiori introduction. This implies users of such applications may have high grade user experience. Modern ERP applications users, however, demand more personalized and intuitive features.

According to Gupta (2016), The Fiori applications offers the following features:

- ➤ Users can increase their productivity through automated task completion.
- ➤ Guaranteeing ease in data entry which leads to data quality in the system.
- ➤ Adoption can be enhanced through the design of the applications.
- ➤ A roll-screened screens reduce cost of training.

SAP Fiori UX Design Principles

Role-based
Designed for you, your needs and how you work

Responsive
Supports how and where you work, at any time

Simple
Focuses on the important

Coherent
Provides one fluid, seamless experience

Delightful
Makes an emotional connection
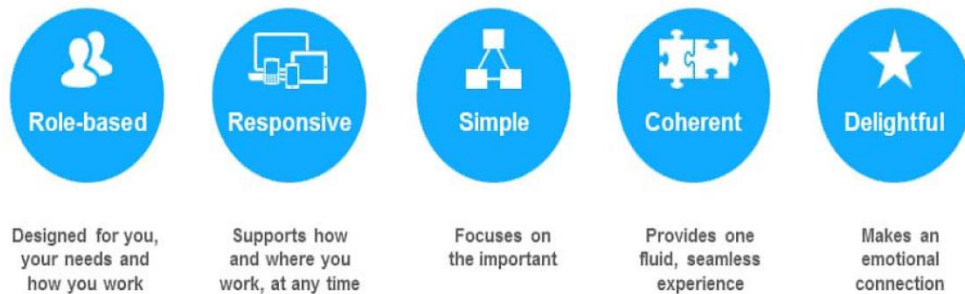
Figure 2 Fiori Design Principles(Mathew, 2015).

Among the advantages of the Fiori Design Principles to the user includes:

It offers great experience to enterprise applications.

The design is based on the role of the user and the business processes involved.

The new Fiori applications offers simplicity in doing business.

The basic features of the Fiori Design Principles, relative to user experience;

Role-based

The company described this design principle as "*a design made for you, meet your demands and expectations*". The new Fiori applications are built to meet specific user-need, whilst offering the user a role platform in the operations of the application. It has been designed to give more specific role(s) to each user. For example, a manager can assign different roles to its employees based on a specific modules. (Mathew, 2015).

Responsive

The responsiveness of the new application offers opportunity for its users to work anywhere at any particular point in time. The application is based on HTML5 which offers user access to the application on any browser in any device whilst offering multiple interaction modes such as mice, gesture and keyboards. One unique feature about the Fiori applications is that, it works independently on all kind of platforms. (Mathew, 2015).

Simple

The Fiori is designed to focused on only essential parts, which makes users to complete their task easily and quickly. Compare to the old version of the User Interface (GUI),this offers the user the chance to operate it on three set of screens (desktop, tablet, mobile). (Mathew, 2015).
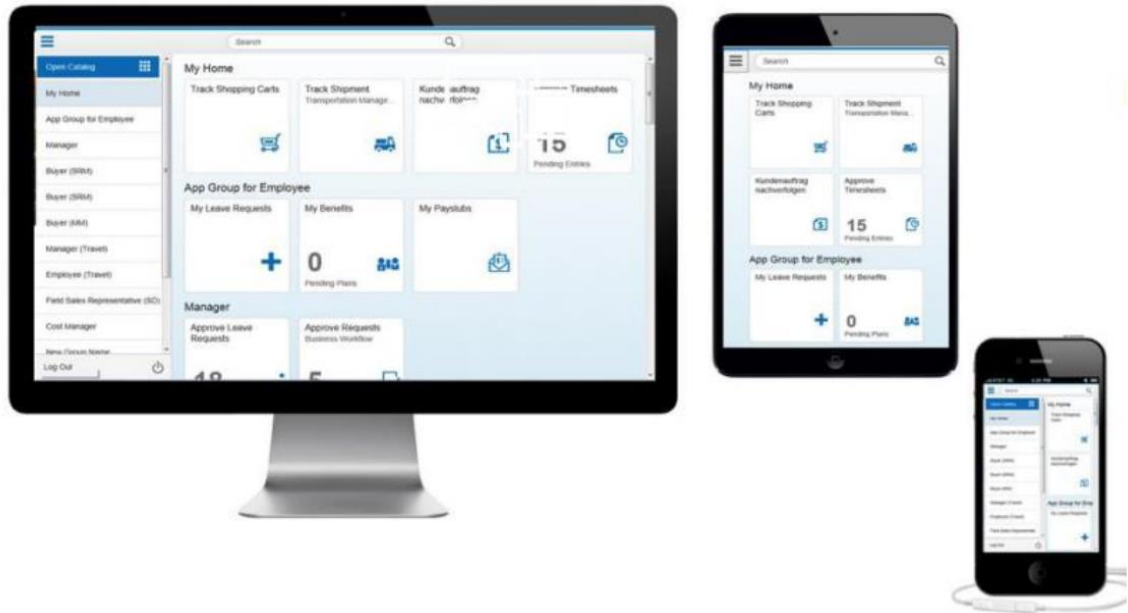
Figure 3 Fiori set of screens for its users (mathew,2015)

Coherent

The application has been designed to offer seamlessly fluid experience to its users. They have been developed with similar look, feel and design concept, which makes its handling among its user easier and comfortable even after using other Fiori applications (Mathew, 2015).

Delightful

This principle makes using the application delightful, as it makes users role becomes more smarter than the previous user interface. The design pattern across the applications makes the user interface simple to understand and follow Mathew (2015).

3.4.2   FIORI TYPES

The Fiori applications comes in three different types with different database needs. The design of the applications were differentiated based on their infrastructure needs and focus. (Mathew, 2015).

- ➢ Transactional application

- ➢ Analytical application

- ➢ Fact sheets

The applications have been designed such that users can access them either within the company network (intranet) or outside the company network(internet). But data security must be ensured when accessing it outside the internet.

Transactional Application

This type of Fiori applications deals with task related access. It gives the user access to create or alter an entire transactional process. The application has been built to be compatible with SAP HANA database as well as all other SAP ERP database, as the Fiori user interface offers priority in task simplification.

Analytical Applications

The analytical type of Fiori offers insight into area of interest and provides reports that lead to drill down into the application for more key performance analysis of the data. The ability to store huge volume of data, ranging from hundreds of megabytes to gigabytes enables this application to generate voluminous data in seconds with the help of HANA process.

Fact Sheets Application

The fact sheet offers opportunity of searching and navigating through related objects. It gives the end user the chance to explore for information in the Fiori search. For example, a user can search for more details on a particular material. The fact sheets enables deep searches in the system for an item by user and displays the results.

3.5   ENTERPRISE RESOURCE PLANNING (ERP)

ERP is an enterprise-wide information system that facilitates the flow of information and coordinates all resources and activities within the business organization (Njihia &Mwirigi, 2014). It enables decision-makers to have full view of the information they need in a timely, reliable and consistent manner. In recent past, ERP software has become widely used in almost all fields such as marketing, human resource management, finance, manufacturing, transportation, education and others (Veneziano et al., 2014)

3.2.1 ENTERPRISE RESOURCE PLANING (ERP) MODULES

ERP system consists of many modules that are integrated with the major functional area of an organization. Each module is designed to interact with each other with easy accessing of information concerning a particular branch, section or department. (Ahlawat, 2016).
Each ERP module focuses on one field of business processe.
Here are some of the Modules that are available in ERP system:

Supply Chain Management (SCM): Involves the process of managing the flow goods and services as well as transforming them into final product. It helps business to know when to order new stock and what particular stocks is needed most at a certain period of time.

Customer Relationship Management (CRM): Involves keeping customers' data and keeping track of the organization's customers across all departments of the organization. Customers account can be updated at any particular point in time.

**Product Lifecycle Management (PLM)*:* This is where the manufacturer can track the design and attributes of a product throughout its lifecycle and monitor changes within the production line.

Warehouse Management Systems (WMS*):* This follows the distribution process involve with finished goods or materials along the manufacture's supply value-chain to the final warehouse destination. WMS modules also help synchronize and control stock movement.

Financial Management: This deals with financial transactions and data, such as handling functions for accounts payable and receivable, financial reporting and treasury management. (TechTarget, 2017).

3.6   ENTERPRISE RESOURCE PLANNING (ERP) AND USABILITY

Recent happenings in ERP industry has taken the   corporate world by storm than expected. ERP systems can be termed as systems of business software that offers us integrated solutions, that ensures smooth flow of functional information within   entire business enterprise setup. Several authors have given definition of ERP systems. Basoglu, Daim and Kerimoglu (2007), defined ERP systems- "a solution system that coordinate activities, decisions, and knowledge across many different functions, levels and business units in a company" (p.75). Additionally, Kumar and Hillegersberg (2000), defined ERP system as "configurable information systems packages that integrate information and information-based processes within and across functional areas in an organization". Tadjer (1998) also described it as a one database, one application and a unified interface across enterprises.

For Davenport (1998), he posits that, one important breakthrough development of the 1990 was the emergence of businesses embracing information technology in the area of Enterprise Resource Planning systems to aid proper running of their business processes. Although the ERP offers diverse ways to communicate with one another by using same information in the system. However, its complexity has long been criticized by a lot of researchers. The critique posits that the systems processes large volume of data at a particular time whilst offering other functions simultaneously. This according to the critics raises the level of frustration and difficulty in carry out those functions in the systems. This eventually adversely affects the end user's experience. According to studies carried out by Lambeck et al (2014) as well as Mahmud and Ramayah (2016), both pointed the unfriendly nature of the user interface with high level of details which causes complexity of ERP system and eventually can negatively affect the usability.

Uflacker and Busse (2007) posits that, in today's world, the essential differentiator of success has become the usability of business and enterprise application scenarios. ERP vendors need to come out with user interface that target specific functional requirements and at the same time meets key usability features as customers are different in nature, It has become very difficult to come up with an excellent user experience due to the complexity in today's ERP systems. According to International Organization for Standardization (ISO), they term usability as "effectiveness, efficiency and satisfaction with which specified user achieve specified goals in a particular environment" noted in Marja & Matt, (2017).

Hombaek (2006) described usability as the human capability to use something easily and effectively. "Quality in use (usable) depicts the effectiveness, efficiency and satisfaction with which a particular users can leverage on to achieve their goals in particular environment. According to Nielson (1994), usability is a quality or attributes that represents the ease with which a human-computer interface is used. In general, usability is the ease of use and learnability of a human-made objects. Designers need to take into account factors such as attraction and usefulness in order to create efficient and powerful usability that comes with friendly and enjoyable experience.

From a different perspective, Hassenzahl et al (2009), considered user experience to a dynamic, context-dependent, individual and subjective overall experience of using a product, system and service to run an object. In the same study, Hassenzahl et al (2009), decribed the quality features of user experience as being comprehensive, easy to understand, simple, clear, concise and accurate. Calisir & Calisir (2004) posits that users can become unwilling to use default interface of ERP systems and that, the user interface is the leading factor that differs an ERP systems from one to another.

According to Singh & Wesson (2009), although ERP systems have enormous benefits, many researchers have criticized it as a result of being too complex. They believe, there is the need to offer easy user interface which is also easy to learn and support users' tasks for ERP systems. This complexity with the systems were as a result of the systems having to integrate and processes large volume data at a particular time. As a result, it leads to poor usability in ERP interfaces. Several reserachers e.g Gupta, Priyadarshini & Massoud, (2004); Matolcsy,Booth & Wieder, (2005) affirmed that, an ERP systems with an effective user interface would provide higher satisfaction by increasing usability of the product. Park & Linn (1999), also states that usability of interfaces can be seen as one of the factors that influences end-user satisfaction. Additionally, the interface usability could increase the intentions of ERP users (Scholtz, Mahmud & Ramayah, 2006). Many authors agree that simplified user experience in system interactions design should be considered as an essential part as in the development of usable application (Nielson,199; Uflacker & Busse, 2007).

Currently, ERP systems have a number of challenges when it comes to its usage and has led to the term usability not usually linked to ERP systems. As the systems has become very complex and users finding it difficult to use (Mathews,2008;Topi,Lucas & Babaian,2005). Topi et al (2005) conducted a research on usability of ERP systems and made the following findings.

- ➢ Navigation in terms of finding information appears tedious and complex.
- ➢ There was a limited guidance from ERP system to ensure accurate completion of task and navigation.
- ➢ The system lack the capability to adapt and support the user's multiple actions and ensure tasks are complete.
- ➢ Presentation was difficult to be understood and interpret
- ➢ The UIs were complex and intimidating to novice users.

In light of the above findings from their studies, they believe that there was the need to provide User Interfaces for ERP system that are usable and personalized (Mathews, 2008; Topi et al, 2005).

In view of the above literally works as reviewed, it is clear that several research has been carried out on ERP system and user experience. Although the existing studies have provided immerse contribution into body of knowledge regarding ERP systems usability in general. But it suffices to posit that very little work has been done in relation to comparing Graphical User Interfrace (GUI) and Fiori application of a particular ERP and SAP products. This implies information appears to be scanty regarding ERP product interface comparism. Therefore this particular thesis objective is to compare the graphical user interface of the SAP product to the new flagship application SAP Fiori to find out if indeed there is a greater difference in terms of its usability.

3.7   ADAPTIVE USER INTERFACES

Due to complexity of User Interfaces, there is the need for user interface to be personalized in order to make them friendly for its users. Currently there are wide range of interaction techniques which can be used to cater for a variety of users. According to Lopez-Jaquero et al (2003) and Paymans et al (2004), one way to remedy the situation is to provide UIs which is capable of adapting itself to an individual user at a run-time.

The need for personalized UIs emerged to take care of the different habits, preferences and work ethics of individual user with a specific community of users (Alvarez-Cortes et al, 2007). Personalized UIs came about in order to reduce the complexity inherent in modern UIs by tailoring the application environment according to the individual needs of the user (Dieterich et al, 1993).

Initially, Intelligent User Interfaces came in to being to cater the need for personalized UIs (Alvarez-Cortes et al, 2007). Adaptive User Interfaces can be used to develop UIs that are personalized and more useful. Adaptive User Interfaces enables UIs in the following ways (Browne et al, 1990; Dieterich et al, 1993).

- Efficient and effective usability by the end user's.
- Reduces the complexity of a system
- Supporting ways and delivering appropriate information efficiently.
- Provide the user with what he/she want to see
- Make the system simple to use
- Improve the overall experience of the user.

The above goals addresses the need to offer a UI that is personalized whilst trying to improve the usability of a system. According to Dieterich et al (1993), AUIs can reduce the complexity of a system and enhance usability by supporting the following;

- Task simplification
- Error correction
- Active and intelligent help
- Improved user satisfaction

The application of adaptive user interface to domain of ERP system ,has the tendency to improve the usability of the ERP sytems.

3.8 USER EXPERIENCE

User experience can be describe as the attitude or emotions of an individual with regards to using particular product. According to Hartson and Pardha (2012, p 19), user experience is the overall effects felt by an individual in relation to the interaction within the context of usage of an application, product, including the impact of emotions during the interaction, the level of usability, its usefulness and the unforgettable experience after the interaction.

User experience focuses on the total effect on design that offers an excellent user experience. To develop not just a wonderful application but rather one that offers excellent user experience. Modern ERP software desingers should place much premium in understanding user's desires, behavior, ambitions and goals. This is because modern ERP software develops pays much attention to the techno-centric practices rather than user-centric ones.

According to Bailey (1996), human-computer interaction shows entirely the human behavior and is employed to drive the designing of the system. Human performance measures the output in using them. Human beings are attributed to the cause of system failures and errors, the whole idea of human factors engineering is to take account of human errors in designing the system to prevent such errors.

3.9   Traditional Usability Idea

Human-computer interaction occurs when a user and device interact to perform a specific task together. Usability is a form of human-computer interactions which ensures the communication between the user and system is efficient, effective and offers wonderful satisfaction to the end user Hartson and Pardha (2012,p 6).

There are a lot of definitions of usability, which has been segregated into the following, according to Krug (2014, p 35):

- ➢ Useful: Does it undertakes something which users need to have done?
- ➢ Learnable: Can individual easily use it without long introduction?
- ➢ Memorable: Does users have to go over again anytime they use it?
- ➢ Effective: How effective is the application?
- ➢ Efficiency: How efficient it is with regard to effort and time?
- ➢ Desirable: Does user's want to use it?
- ➢ Delightful: How enjoyable it is?

According to krug (2014, p 35), one essential component of usability definition is that, if something can be use easily then it means:

An average individual and less experience should be able to find out how to use it and achieve something without any hindrance than it is worth.

Usability is an essential part of user experience. It is very difficult to come up with an excellent user experience without usability. An Application with poor usability leads to a bad experience. If users of such applications are unable to achieve their goals in an efficient, effective and a satisfactory manner, then users will start looking out for an alternative

application which will offer them the needed experience. Hence whiles developing an ERP application, it is very important to focus on its usability to reduce the tendency of losing customers to a competitor due to poorly design interface resulting in poor user experience.

Usability has become part and parcel of today's technology, According to Hartson & Pardha (2012), modern users of application are not looking for amiability but rather need efficient, effective, safe and fun tools to accomplish their goals.

3.10 Usability + Utility = Usefulness

These days, designs have become too complex. To provide end users with what they need most, then utility must be incorporated in the design. Products becomes useful to end users when usability and utility are out together. One of the forms of achieving utility for an excellent user interface design is simplicity. According to Joe (2010): "*Good design is obvious. Great design is transparent*" and For Krug (2014, p 39), the first law of usability is "*Don't make me think''*. These two great quotations has deep dive into the issue of simplicity, taking into account goals of end users and provide them ways to accomplish them without any difficulties. Wong (2016), said simplicity in design means going further and understand what the end users is looking for and using that information to developed the product devoid of any elements and closed the gap between the end users aims and ways of achieving them through your system.

According to Wong (2016), simplicity in design can be achieved in the following ways:

➢ Maintain Clarity: understand the needs of the user in line with their aims.

➢ Make use of automation: Design should incorporate automation.

➢ Limit Options: Information sent should focus the design.

➢ Reduce the "Gulf of execution'': Give reasons why users should use your application.

Satisfaction of end users has become a traditional way of measuring usability and has now become a component of usability idea, shared among many individuals and currently part of ISO 9241-11 as part of the basic definition of usability.

User satisfaction related questionnaires have been used generally to find out how end users feel or get their perceived usability on using a particular application.

3.11 Difference between usability and User experience

People often confused these two- usability and user experience, and in reality they are not the same. In that regard, Misfud (2011) gave the following explanation;

Firstly, the goal of each of the two concepts differs from each other. From the perspective of software development, the main goal of usability is to make usage of the application easy such that end users can achieve their aims using the application but the user experience focus on the joy of using the application.

Secondly, both terms can be defined based on asking some basic questions. Usability can be frame as, was it feasible for end users to achieve their aims? "The user experience can be in the form of open question "Did the end user get a wonderful experience using the application?"

Thirdly, He believes the required resources differentiate the two concept. Whiles usability requires employees with effort to influence the application's user interface design, User experience needs more effort from different units of the organizations such as the marketing, software developers as well as testers.

Finally, both concepts plays distinct functions in user interface design. A user interface makes learning easily, simple and offers more intuitiveness. A user interface designed to offer an excellent user experience is the one more appealing to end users. However, usability is still essential. The fact that, much premium has been place on user experience does not means the user interface is not usable.

3.12 From Usability to User Experience

Even though functionality of an application is essential, but applications that comes with better experience has a competitive edge over others. Usually those applications outsells ones with more functionality. These days not only the characteristics of software applications have become valuable on the market but end users are looking for application which offers unforgettable user experience. End users enjoy their experience whiles interacting with the user interface. According to Hassenzahl & Roto (2017), they made a case on what differs from the functional view of usability and the emotional impact on phenomenological view. For them individuals acquire applications or technical product because "they need to carry out some task" be it recording information, saving documents or search for information. They call these as "do goals" which has been clearly looked into by the usability and important measures of their realistic quality.

The usability concept has not become outdated, with the arrival of new ideas related to user experience. The main elements of usability usually depends on the learnability and ease of use of software applications now adays.The concept of usability still illustrate all the usability factors, whiles keeping its value and making them relevant. A well implemented ease of use offers end user's joy in using the applications.

3.13 DEFINITION OF USABILITY

The International Standardization Organization (ISO) 9241 defines usability,As the effectiveness,efficiency and satisfaction with which specified user can achieve the specified goals in a   particular environment.(ISO,1998).Usability focuses on people,what satifisfies,how they perceived usage of a product and understand them.Technology changes at a faster pace whiles people react slowly to change.In usability three terms are often used namely:

> ➢ Effectiveness: The level of accuracy and completeness with which a user achieve specified goals .
> ➢ Efficiency:The resources used in achieving that level of accuracy.
> ➢ Satisfaction:The comfort and ease of use the user derive.

Although the ISO 9241-11 has become the standard of usability for all usability specialist,But the most widely accepted is the one introduced by Nielson.According to Nielsen (1994) refers to the following factors:

> ➢ Learnability: The ease of learning the functionality and the behaviour of the system
> ➢ Efficiency:The level of attainable productivity,once the user has learned the system.
> ➢ Memorability:The ease of remembering the system functionality,so that the causal user can return to the system after a period of non-use,without needing to learn again how to use it.
> ➢ Few errors:The capability of the system to feature a low error rate,to support users making few errors during the use of the sytem,and in case they make errors,to help them easy recover.
> ➢ User's satisfaction: the measure in which the user finds the system pleasant to use.

Usually people might be confused the term usability and usetr experience.Tom Tullis and Bill Albert(2008) has discussed thouroghly in their book with a view that ,user experience takes a much broader view than usability.user experience is not only considered

how a user can undertake a task completely but rather the whole interactions that comes along with thoughts, feelings and perceptions from the result.

3.13.1 USABILITY PURPOSE

The basic aim of usability is to ensure that the end user carried his work smoothly by applying his average effort without any dissactifaction.It relates to design of system, applications and product.which include supporting documents as well as users interface,in order for the software to run efficiently.Both usability and functionality can said to be task related.the user need to understand the actual functionality of the system in meeting their requirement.According to Scott (2008),a good interface design and documentation help overcome the conflict between power and ease of use to enhance both usability and functionality.The importance of having a better overview on interface usability will improve the pervceived usefulness of ERP systems in much better way and increase how users of such applications accept the system.In this study,the author want to find out if indeed moving from from the graphical user interface to a web based interface means inprovement in the systems.

3.13.2 Usability Measurement and Evaluation

Measurement of usability can not be done directly,but rather through analysis of attributes.It can be measured empirically or analystically through the use of inspection methods (Hollingsed &Novick, 2007; Hombaek, 2006).
Usability Inspection can describe as the common name for a set of methods that are all establish towards inspecting interface by evaluator's.Typically,usability inspection is focused at detecting usability problems in design Mack et al (1994).Several methods of inspection give themselves to the inspection of user interface specification and have not necessarily been implemented yet,which means the inspection can be performed early during the usability engineering lifecycle Nielson(1992).

3.14 FORMS OF USABILITY INSPECTION METHODS

3.14.1 Heuristic Evaluation

This is the most informal method of usability inspection method which involves having a usability specialist judge undertake inspection to confirm whether each dialogue elementconforms to the principles of usability. Nielson (1990).This form of usability methods were introduced by nielson and Molich (1990).This method is carried out by way of a small group of usability expert to evaluate a user inmterface using a specific guidelines and finding out the nature of each usability and where it exists.They were of the view that, the aggregated outcome of five to ten evaluators of four interfaces i dentified 55 to 90 percent of the known usability problems for those interfaces.They concluded that ,this form of evaluation was a cheap and intuitive form of evaluating the user interfcae early in the design process.

3.14.2 Cognitive Walkthrough

Another form of usability inspection method which involves more direct detailed line of action to stimulate users problem by solving problem at each step through dialogue the dialogue, checking if the stimulated user objectives and content can be pressumed to guide the next line of action. Lewis et al (1997).This method involves the evaluation opf the design of a user interface for its ease of exploratory learning based on cognitive model of learning and use Wharton et al(1994).unlike other forms of evaluating methods, this form can be carried out any time during the development,from the original mocks up to the final release.The process involve two phase,the preparatory phase and the analysis phase.In the preparatory phase ,the evaluaters determines the interface to be used.its like users the task and the actions to be taken during the task.But during the analysis phase the evaluators work according to guidelines of human computer interaction which was introduced by Lewis and Polson.(1991).

➢ The user set a goal to be completed within the system.
➢ The user determines the currently available actions.
➢ The user selects the action ,that they think will take them closer to the goals.
➢ The user performs the actions and evalutes the feed back given by the sytem.

3.14.3 Pluralistic Usability Walkthrough

This form of usability testing incorporated the traditional usability walkthrough to representative users,product developers,memebers of the product team and userbility expert in the process.the pluralistic type of usability testing is defined by five featutes.

➢ Inclusion of representatives users,product developers,and human factors professionals.

➢ The application screen are presented in the same order as they would appear to the user.

➢ All participants are asked to assume the role of the user,would take for each screen before the group discusse the screens and;

➢ When discussing each screen,the representative users speak first.

The developers of this form of testing found both benefits and limitations of the approach.One advantage of this method,it offers feedback from user's even if the interface is not fully functional.on the other hand,it also has its negative side, because this approach is limited to representative rather than its comprehensive user.

3.14.4 Questionaires Form Of Usability

This can be termed as the simple form of usability eveluation.it normally includes a set of pre defined questions combined in order and forwarded to a target sample.The major aim of a questionaire is to verify ideas,knowledge, feelings, opinions, attidutes, and/or self report behaviour of a defined object.it has become the most widely used method in modern day research .queestionairs were design using google forms and all participant were given link to the online questionas after going through each case study of the SAP module.The designed of the questionaires was inspired the ERP criteria discussed in chapter two. The usability system scale adopted was the one developed by john Brooke (1996).it was chosen because it has been widely used in various usability engineering studies.

3.14.5 Thinking aloud usability testing

Thinking aloud is a popular and effective method for usability testing Nielson,(1994). It may provide us with useful information about users who are interacting with a certain application. The mainly qualitative data provide indications of application areas that cause user problems, and these data may be used for further development. In addition, actually seeing user's

struggle with parts of an application is usually a compelling argument for developers to further improve their product.
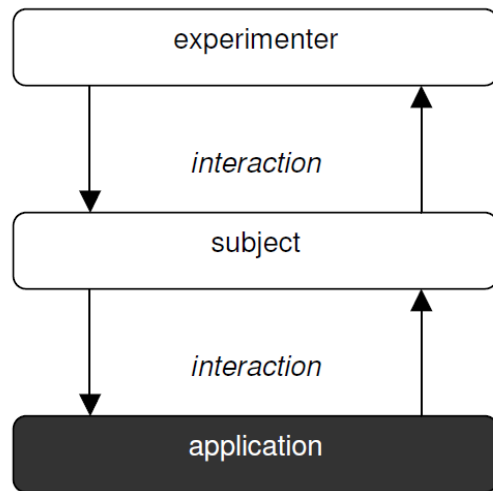
Figure 4 Thinking Aloud study usability

Figure 4 show Schematic experimental set-up for a thinking aloud study of usability. Thinking aloud as a usability test is different from thinking aloud as a research method. When thinking aloud is employed in the context of a usability test the schematic setting is subtly different from thinking Aloud as a research method. The focus of attention (black) is not so much the subject as the application the subject interacts with. So, essentially, there are two interactions going on: one between subject and application and one between experimenter and subject. Naturally, this by itself does not mean that a usability practitioner could not adhere to other method of evaluation.Nielson,(1992)

From the above several forms of usability testing methods,This study turn to focus on the questionaire form of usability methods to compare and evaluate ,if indeed there is a much difference between the old sap graphical user interface and the current state of the application called SAP Fiori.

3.15 COMMON USABILITY CRITERIA

Various criteria has been used to identify usability issues within an ERP systém as there is no standard way of deternine the usage of ERP systém.Several studies of ERP systém have come up with a lot of usability evaluation criteria.This evaluation criteria

are limited and varied ,as aresult comparing this criteria becomes a complex task.According to (Singh &Wesson,2009) A common set of criteria need to be established, against which all the eveluation criteria could be based upon.

3.15.1 Usability Criteria for ERP Systems

The most frequent issues of the usability occur in terms of five criteria, which are used to evaluate the usability of ERP systems; and which could classify the majority of usability issues with ERP systems. These criteria are (Calisir & Calisir, 2004), (Herbert et al., 2006),(Iansiti, 2007), (Matthews, 2008), (Wu & Wang, 2002):

- ➢ Navigation.
- ➢ Learnability.
- ➢ Task support.
- ➢ Presentation (input and output).
- ➢ Customization.

Figure 5 ERP Usability Criteria (Singh & Wesson, 2009)

3.15.2   Navigation

This could be described as the critical design issue for most erp systems;which leads the way in determining the ability to get access to right information,reports,options,menus and eletments within the application effectively and accurately. According to Singh & Wesson(2009),The navigation criteria determine whether:

- ➢ Finding information is easy
- ➢ Functionality of the application can be ascertain easily
- ➢ The systém can lead the user through a set of sequence of transaction to complete a process.
- ➢ The user interface offers effective navigation of the systém.
- ➢ There is the linkage between the required information and the search item.
- ➢ The systém offers alternative interactions styles of various users.
- ➢ The user of the application   can use alternative navigation ways to achieve same results.
- ➢ There is a clearness interms of the next line of action within the systém.

3.15.3   Presentation

One major issues associated within usability studies of erp systems was related to the display of output is too complex,which has become very difficult to interpret and understand by its users.

This criteria have the intention of coming out with the correct layout of menus, dialog boxes,controls and output generation after a data entry.According to Singh & Wesson (2009), the presentatation criteria determine whether:

- ➢ The layout has been fully designed.
- ➢ The output information is complete,timely and accurate.
- ➢ The information display is easy to undertand by its users.
- ➢ The output presented supports can help make inform decision by the user.
- ➢ The information provided offers clear insight into other departments.

3.15.4   Task Support

Usually the non existence of alignement between the erp systems and business processes of entities leads to a huge amount of difficulties and lack of interest in using erp systems.the task support criteria   seeks to determine if indeed there is a strong linkage between the sytem and the business processes, in order to ensure efficient completion and task support within the system.The task support criteria determine whether:

➢ The terminology use by the system is in comformity of that of the user.
➢ The system can lncrease the users productivity.
➢ The sytems offer quick and efficient responses.
➢ The systems helps the user in acomplishing its task.
➢ The is system is not soo difficult to be used by the user.
➢ The system allows flow of information from various departmental units.

3.15.5 Learnability

ERP systems have generally been regarded as too complex to learn and use it.As a result of this notion, it has made a lot people not interested in learning erp systems.This criteria determines the amount of effort one requires in learning and using the applications efficiently and effectively.The learnability criteria determines whether:

➢ A user do not need long preface to learn and use the application.
➢ There is a built in support to help the learning process of the user.
➢ The system can be explore easily.
➢ The user can become skillful within a short period of time.

3.15.6 Customization

One critical aspect of erp systems,how easily can it be customise to meet the particular needs of the end user.Once a user can customise an erp system to suit its business processes,then it could leads to increase in productivity of the user.This criteria determines whether:

➢ The system can be easily customised to suit particular industry needs.
➢ The system allows for user-level customization.
➢ The user is capable of customizing   at a transaction level.

- ➢ The system gives room to a include busniess process to the existing ones.
- ➢ It gives way for reconfiguration over a particular point in time.
- ➢ The user interface can be reallign without affecting the logic of the system.

From the above erp usability criteria,This study will only use four out of the five criteria due to the study design which do not include customization of the system.The four criteria to be used in the study are the navigation, presentation, learnability and task support.

4 Practical Part

It has become empirically important to assess the SAP old Graphical user interface with the new web based interface SAP Fiori application. This study seeks to comapare between SAP fiori and SAP GUI on a set of scenarios and evaluate the impact on operators performance. The author conducted the study to determine if there is a difference between the old interface and the new simplified inteface. The study checked the compliance of the new web based applications iin relation to the ERP usability criteria.whether the movement from the old interface to the new one means inprovement in usability.Since developing and implementing a new user interface requires huge investment in relation to the old user interface.Therefore the importance of the usability inprovement is paramount.

4.1 Research questions

1.What is the current state of user experience in enterprise resource planning applications.
2.What is the difference between the SAP Fiori and SAP Graphical user interface.
   ➢ Does the movement from the old user interface to the new simplified user interface.
   ➢ Does the current state of the new simplified user interface conforms to modern usability criteria.

4.2 Study Design

The study has two parts, firstly each participant was presented with a case study and two set of User Interfaces thus, the old Gui and the new Fiori application on connected Desktop Computer connected to a Tobii Eye-tracker application.The first pair comes with a case study on material management 1 and the second pair Material Magememt 2 with set of transactions to be entered in the Gui interface.Below show scenario of the transactions each participant performed with regard to material for the graphical user interface.

In total, 12 participants were involved , 8 User Interfaces(four GUI and Four Fiori interface) and 3 criteria (efficiency,effectiveness and perceived usability) .So the total sample size (12 x 8 x 3)= 288 samples.Tobii Eye Tracking application was also employed in the study with same number of participants using and User Interfaces (Four GUI and Four Fiori Interface).

4.3 Material Management

4.3.1 Material Management One (Gui)

First Follow The Sap Easy Acess Menu Path
THEN FOLLOW BELOW STEPS

1. Logistic

2. Material Management

3. Purchasing

4. Purchase Order

5. Display Order

The above scenario showed transactions with regard to material management one , where participant were asked to display a particular purchase order using the old user interface.After the completion of task ,particpant were ask if they noticed where the display items were ordered from and were asked to further displayed the invoice of the orders in material management two in the same user interface and after the completion of the task. Participants were further asked if they identified the Accounts payable specialist who recorded the invoice item in the system.

The below scenario shows the steps to be done in material management two through Graphical User Interface.Follow the following steps:

4.3.2 Material Management Two (GUI)

1. Purchasing Document Per Supplier

2. Fill out the vendor information

3. Start search

4. Click on other document to display information

5. Click on exit icon

At the end of the task in both the material management one and two ,participant then proceeded to fill out usability questionaires on google forms based on their perceived usability. After completing the task on the Graphical user interface,the participants were given another set of case study on material management to be done on the new simplified (Fiori).

4.3.3   Material Management One Fiori

1. First launch the fiori launchpad
2. Click on material Management
3. Choose my purchasing Documents items
4. Fill all supplier information
5. Choose purchase orders
6. Display information

After completing the task in material management one,then participant turned their attention on the material management two to be carried out in the new simplified interface.

4.3.4   Material Management Two Fiori

1. Launch fiorilaunchpad
2. Click on my purchasing document items
3. Fill the supplier information
4. Click on the supplier invoices
5. Display invoice document
6. Click on document to have overview

From the above scenario, participant were asked to display the invoive overview from the vendor and whether they noticed who recorded the invoice document in the system as well the quantity ordered,the amount delivered,order value and the status of each line item.

From the above scenarios of both the old user interface and the new simplified fiori application,it looks entirely different even though the design case study looks the same.with the new user interface the participant does not need to have too many clicks to navigate through the system.A few number of clicks in the new interface offers you the same output with the old old which requires too many clicks.

4.4   Human Capital Management

The first sessions dealt with case study with regards to material management and the second session will focused on human capital management one and two between both
user interfaces. But this time   participants were asked to start with the fiori applications before the Graphical user interface.

4.4.1   Human Capital Management One Fiori

1. Click on the fioriLaunchpad
2. Choose human capital management
3. Click on organizational Display
4. Search organizational term
5. Find the organizational plan
6. Click the expand button to view all department

Above scenario show the new simplified user interface fiori on human capital management to be followed on the case study.Participants were asked to display organizational plan and search a particular company by name Global Bike Group in order to display all the department under the organization and further asked question with regard to details of particular department and the head of the department as well as certain positions with regard to the department.The participant went further in navigating through that department and were asked to provide answers to the assigned company code, its validity period and the city in which that particular department is located.After completion of the Human capital management one,then the second part of HCM two continued.This part involved navigating through the personal Data record of a specific personel within a department.

4.4.2   Human Capital Management Two Fiori

1. Launch fiori launchpad
2. Display personal master record
3. Click general organization data
4. Click on organization assignment
5. Display personal data record

From the above scenario partipants were asked to display personal record of an employee and were asked to provide information regarding the sub area the emloyee belongs to as well the position held within the organization.The participant were further asked to navigate through and provide details of the employee,social security number and date of birth before returning to the home of the fiori lauchpad overview.The task ends here and participants proceeded to online usability questionaires on google forms based on their perceived usability.

The last part of the tasks on the human capital management were done in the graphical user interface before the paricipants went ahead to filled the online usability questionaires.They were asked to carry out same set of task of Human Capital Management in the old user interface and navigate through, inorder to provide certain information on the personal data record of am employee within the organazational units.

4.4.3   Human Capital Management One (GUI)

1. Click on Human resource
2. Click on Organizational management
3. Click on organizational plan
4. Click on organization and staffing
5. Display organizational plan
6. Click on organization unit

From the above scenarios the participants were asked to open up organizational plan of a company name Global bike Group and search within the organization units and provide answers to certain information through their navigation of the sytem.They were asked how many positions were plannned for an organizational units and does one particular department has a departmental head as well as looking for a particular tab and provide information regarding the company code, its validity period and the city within the orgaanization.After completing the first part,the participant proceeded to the final part of human capital management and carried out the tasks before answering the usability questionaires based on their perceived usabilty before finally submitting all their responses .

4.4.4   Human Capital Management two (GUI)

1. Launch The Easy Acess Menu
2. Click On Human Resource
3. Click On Personel Management
4. Click On Administration
5. Click On HR Master Data
6. Display Organizational Units
7. Highlight organizational asignment
8. Display personal data

From the task scenario above, participants were asked to navigate through the personal master data of the organization unit by showing the sub area a particular employee belongs to and the employee position within the organization.They were further asked to navigate through a particular tab and display employee information regarding full name of the employee,social security number and date of birth before returning to the main screen of the graphical user interface.

After each task completion, participants were made to compare usability of both of the interfaces presented in the study by filling out usability questionaires through google forms based on their perceived usability.The system usability scale questionaires were used because it has been used widely and validated in the literiture.The time taken to complete each session were both recorded to measures the participants efficiency with a particular User Interface.

The Tobii eye-tracking applications was used to find out how lost the participants were in using both of the User Intertfaces during the sessions.At the same time all sessions of the particpants were video recorded, all participants were told to express their feelings out to give overview on their experience.The recordings of the session helped in finding out whether a participant missed or skip a task due to human error or complexity of a particular interface.the application further recorded the fixation count and segement duration in coming out with time each segement of the session had a longer period among the interfaces.Gaze plot of each participant was recorded to see the number of clicks on a particular interface in arriving at the number of clicks each participant session.

4.5   Participants Demographics

The total number of participants in this study consists of twelve individuals,who voluntered to take part in the study without any financial conpensation.The average time by each participant was 45 minutes.The selection of particpants were done randomly and had different demographics in terms of: age, gender, edcation background, experience with ERP systems, study Programs and employment status.Details about the participants demographics are shown in the table below.

Table 1 Sample Demographics

GENDER	TOTAL	PERCENT
MALE	8	66,7
FEMALE	4	33,3
TOTAL	12	100
AGE RANGE	**TOTAL**	**PERCENT**
20-24 YEARS	2	16,7
25-29 YEARS	4	33,3
30-34 YEARS	4	33,3
35-39 YEARS	2	16,7
TOTAL	12	100
STUDY PROGRAM	**TOTAL**	**PERCENT**
BUSINESS OR ECONOMICS	4	33,3
INFORMATICS	5	41,7
PUBLIC ADMINISTRATION	0	0
OTHERS	3	25
TOTAL	12	100
EMPLOYMENT STATUS	**TOTAL**	**PERCENT**
Part Time	5	41,7
Full Time	5	41,7
None	2	16,6
TOTAL	12	100
ESPERIENCE WITH ERP SYSTEMS	**TOTAL**	**PERCENT**
Less than 3 months	2	16,7
3-12 months	1	8.3
1-3 years	4	33,3
More than 3 years	1	8.3
None	4	33,3
Total	12	100
Highest Degree Obtained	**TOTAL**	**PERCENT**
Bachelors Degree	**6**	**50**
Masters Degree	**5**	**41,7**

Doctoral Degree	**1**	**8,3**
Total	**12**	**100**

From table above,The participants in the study includ both academic and non academic memebers of staff. Each of them went to the university's eye-tracking lab to participate in the study at different point in time.

All participants were given their case studies before starting each session.In order to avoid potential bias of the experiment, the counter balancing technique was employed among the paricipants design.: Counter balancing remove the effects of learning from the first task performed Preece et al, (2015).Furthermore, once a participant finished the task and submitted their responses.No one was alllowed to change his/her given responses again.

5   Results and Discussion

In this particular chapter,the collected data is analysed and the reults are explained in details relevent to other existing literiture.two different approach were used in the analysis.The first one looks at the the efficiency and perceived usability between the two user interfaces and the second approach looks into the eye-tracking data of the participants involved in the study.

5.1   Perceived Usability And Efficiency

To verify whether there are significant differences between the old user interface and the new simplified one .The wilcoxon test was used in determining the significance difference.The collected data did not have a normal distribution and therefore the appropriate test to used is the wilcoxon rank test ,because the data collected does not assume normality distribution.The test is usaully used in case of continues variable,which can be related to segement duration and the perceived usability scores of the participants involved.Because this study involved only two user interfaces, the   accurate test in dertermining the significance difference among them is the Wilcoxon rank-signed text,which usually works pefectly with a sample less than or greater than 20. Instead of the need of less than or greater than 30 in case of comparing more than two user interfaces. from the table the outcome of the wilcoxon test is reported using the z-statistic whiles the significance level is depicted using the p-value of the test.The stata 15 application was used in analyzing the results.

Table 2 Wilcoxon's rank test for efficiency

USER INTERFACE	COMPARISON	N	Z-VALUE	P-VALUE	RESULT P < .05	R
FIORIHCM1	GUIHCM1	12	-2.1	0.036	diff	.67
FIORIHCM2	GUIHCM2	12	-.33	0.735	no diff	.26
FIORIMM1	GUIMM1	12	-.98	0.327	no diff	.39
FIORIMM2	GUIMM2	12	-2.1	0.036	diff	.67

The results presented in Table 2 show the outcome of the test in relation to the efficiency based on segment duration of the tasks used in the study.The results   shows that,two (FIORIHCM1-GUIHCM1) /(FIORIMM2-GUIMM2) of the comparisons between the new simplified user interface and the old user interfaces appears to be more significant in terms of improvement in all the tasks.Both tasks recorded a p-value of less than 0.05.which implies

during the test ,there was statictically difference between the results of the task duration of the fiori user interface and the old user interface which was conducted in human capital management one.Another important outcome of the tests is that,there was also statitical significance between the results of the tasks duration of the simplified user interface and the old user interface in material management two.

On the other hand, there were no statistical diference between the simplified user interface and the old interface in human capital management two.Additonally,the outcome of the test in material management one appeared to be insignificant during the tests.So based on the outcome of the tests.Accordingly, the outcome of all participants during the tasks on material management one and human capital management appeared to be statisically insignificant.

The cohen size effect were computed for the wilcoxon's signed rank tests using the formular given in Pallant (2007) and Rosenthal (1991, p. 19; 1994).According to Cohen (1992), size effect of .20 are considered to be small, .50 are medium , and .80 are seen as large to let the researcher to measure the outcome of tests of effect size in a recognized scale.

The effect size of the for the user interface(FIORIHCM1/GUIHCM1),(FIORIMM2/GUIMM2) revealed values of .67,which can be seen to have a medium effects.Whiles (FIORIHCM2/ GUIHCM2),(FIORIMM1/GUIMM1) with side effects of .26 to .39 are considered to have small to medium size effects.

The outcome of the results affirmed that participants experiences some level of improvememt using both the simplified user interface and the old user interface.Although, the design case studies had the same procedure but the time taken to complete a certain tasks differs significantly.

**Table 3 Wilcoxon's rank test for perceived usability**

Usability Criteria	Comparison	N	Z-Value	P-Value	Result P < 0.5	R
NAVIGATION	NAV- PRES	12	-0.69	0.4852	no diff	.36
PRESENTATION	NAV- TASK	12	-2.80	0.0050	diff	.59
LEARNABILITY	PRES -LEARN	12	0.80	0.4220	no diff	.29
TASK SUPPORT	LEARN-TASK	12	-2.62	0.0087	diff	.69

The outcome presented in table 3 revealed that,there are no statistically significant differences in the usability criteria between navigation and presentation with recorded p-value of more than 0.05.which implies that during the tests the perceived usability of all participants

between the navigation and presentation,there were no statistically significance between the outcome of the experience with regard to navigation and presentation during the conducted tests.One other results recorded in the test is that, there was also no statistically significance difference between the perceived usability of all participants between the presentation and learnability usability criteria.

However,there was statistically significance difference between usability criteria in navigation and task support.which recorded a p-value of less than 0.05.Another usability criteria that recorded statistically significance was between learnability and task support. Based on the outcome of the results, task support appeared to be the leading criteria among all participants during the conducted tests.

The author further computed the size effect for the wilcoxon signed rank tests using similar formular as in the tests for the efficiency.The size effect of navigation and task support recorded a value of .59 and the size effect of of learnability and task support recorded value of .69 both of the values could be considered to have a medium size effect.On the other hand,the size effect of navigation and presentation recorded a value of .36 and the size effect of learnability and presentation revealed a value of .29 and these values could be considered to have a small to medium size effects.
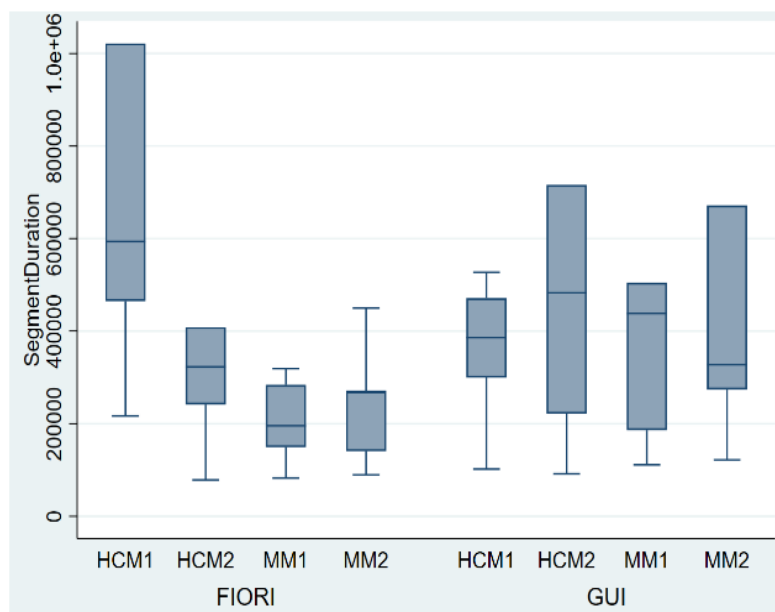
**Figure 6 Box Plot Segment Duration**

The above box plot shows the of segment duration by all participants during the conducted tests.The results shows an improvement in all the tasks except the human capital management one,where the old graphical user interface appeared to be more efficient than the new simplified user interface although the task given to all participants were same content.But all in all,the findings of the conducted tests means inprovement in user experience which means the new simplified user interface offers much better completion time compare to the old one.For instance,if a tasks would take a long a period to be accomplished in the old user interface.The new simplified fiori offers less time in task completion and that could lead to productivity and increase the attitude of its usage by users.modern ERP users are not looking for poor user experience.ERP aplications with bad user expereince will be mostly affected in fiercely competitive enviroment,because modern consumers of erp has conceptualised user experience as norm and no matter the design of the application and what it can accomplished in a given time.If it does not offer excellent user experience then the attitude by consumers will be minimal.ERP vendors with poor user experience will be at a competitive disadavantage with vendors who offer excellent experIence to its consumers.The introduction of the simplified fiori by SAP AG to some extent brought some level of improvement in their user experience in relation to their applications.Although, the new simplified application does have its own problem been experience by the users.

The findings of the study with regard to segement duration of all tasks conducted comforms with the findings of other existing literiture.Although not many works has been published with regard to sap applications using tobii eye-tracking application.But the outcome of the research by Akiki et al (2016),on engineering Adaptive model-driven user interface where they used the tobii eye tracking application to find out if there is an improvement in the initial user interface and the new simplified user interface of SAP application.The outcome of their finidings revealed that,indeed there has been tremendous improvement between the initial interface and the simplified.

Additionaally,In the published work of Makbule,(2017) where he was examing the technology accepted model of ERP users, A Case of SAP fiori.Although ,he did not apply the eye-tracking application in his study.The findings of his work in relation to SAP fiori is in conformity with the findings of this study.He affirmed that,indeed the sap fiori applications has seen improvement in relations to segment duration and further believe the new simplified applications would complete enhance their productivity and effectiveness at work place.

Furthermore, Daniela et al (2019) came up with a similar findings in their published work of Technology accepted model in sap fiori and they concluded that,the introduction of the new simpliefied fiori has seen improvement from the old user interface and they believed tasks that were previously done in the graphical user interface can now be done in quick and easiest way with the new simplified user interface.

From the above findings end user's of the new simplified user interface will tend to use the new applications,if they feel using such applications will offer them excellent user experience than what they used to feel with the old user interface application.
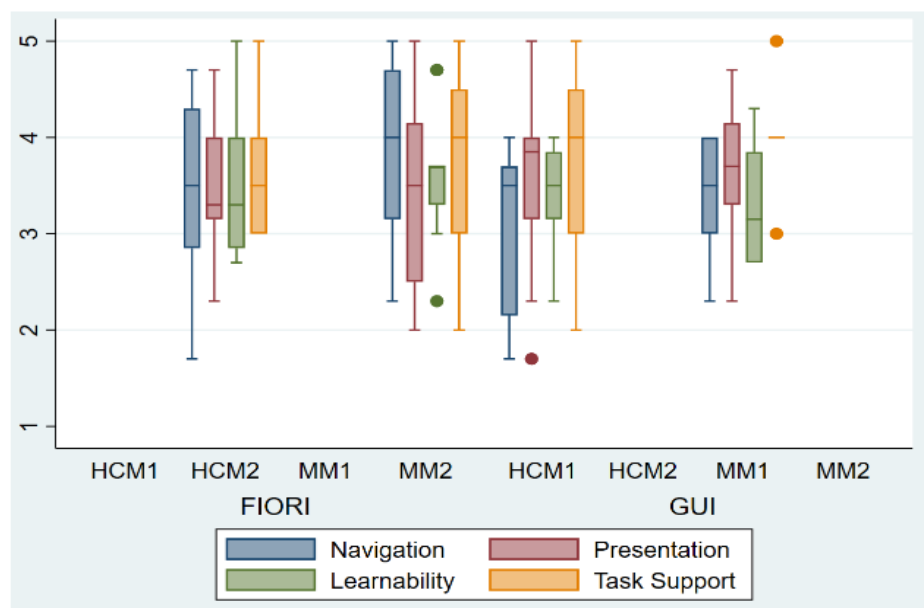
Figure 7 Box Plot Perceived Usability

The outcome of the perceived usability scores of all participant involved in the conducted tests are shown by the Box plots in figure 7.Few outliers are shown in the graph but are not extreme cases.The perceived usability questionaires were chosen by each participant after completing each task of the conducted tests and were asked to fill out the online usability questionaires based on how they feel about the user experience of each user interface.They were asked to fill out ten questions about each user interface

based on the navigation of the aplication,the presentation outlook of both user interface,How easy was it for one to learn and use the application and finally does the application support their tasks.These questions were used in the study,so as to find out if indeed there has been any improvement between the two user interface in relations to their comformity of modern usability criteria.The outcome of the results did not shown tremendous improvement from the perceived usability of the old user interface and that of the simplified user interface.Generally individuals perceived things differently and based on the outcome of the box plot ,some participants perceived the old user interface to be in conformity of modern usability criteria than the new simplified.But on the average scale, most of the participants believed the perceived usability of the sap fiori applications is better with a scale of 3.6 compare to that of the old user interface with scale of 3.4 out 5 in human caital management task.In similar vein the average score of the simplified user interface is 3.7 compare to that of the old user interface with a score of 3.5 out 5 in material management tasks. Based on the outcome, the usability scores of the simplified fiori user interface application appeared to be in conformity to the modern usability criteria. Of all the usability criteria,the task support recorded a higher scale of 3.7 out 5,which implies that,participants believes the new simplified user interface supports them in carrying out tasks compare to the old user interface.Modern erp users are looking for applications that can support them in carrying out their work.one good features of an application that offers excellent user expereince to its users are those offering task support during its usage.Employees of organizations are likely to improve their performance if the applications provide them with sufficient support.The findings in relation to task support during the conducted research conforms with other published works.

According to Costa, (2010) in his published work on testing usability of ERP system,he concluded that modern ERP should be able to support the task of the end user's.He further opined that,consumers of ERP will be happy working with system which offers them support and implicitly maximize their performances.Additonally according to Akash et al (2009),in their publication of evaluation criteria for assessing usability of ERP systems,their findings also agrees with the outcome of this study.Based on the findings of this study end user's are inclined to used the new simplified user interface as it will enhance them in performing their tasks.

The second criteria with high scores of responses based on the perceived usability of all participant was the navigation criterion,the questions under the navigation were to

find out whether the new simplified is easy to access information, it supports alternative navigation paths and lastly it supports efficient and accurate navigation of the system during the conducted tests.An ERP system needs to allow users to access information and allow efficient navigation of the whole system to enable user's to gain all the necessary information in the cause of using such applications.Based on the findings of the study,all participants believes the new simplified fiori allows efficient navigation of the sytem than the old user interface.when users are able to navigate effciently through a system then their attitude towards its usage increases.

From the side of learnability criteria, almost all participant asserted that the new user interface does not required long training,the applications is not so exhausting to use and user's can get to the various areas of the application through exploration.For ERP application to be in tandem with modern criteria usability criteria,then the application should not be too difficult for one to learn and use,its users should be able to explore many areas of the application without struggle.Based on the outcome of the study,participants believes it is easy to use the application without long explaination. This affirms to the fact that,the new simplified user interface application conforms to modern usability criteria for an erp application.Once a user of a system is able to learn and understand an application with less difficulties,then users will always be willing to work with such systems.

The last usability criterion in the conducted tests was the presentation criteria.Participant were asked about their perceived usability on each tasks during the test.The presentation criteria wanted to find out about the information been display by the application, how the layout, list of the application are structured and can the output be interpreted in an easy way by the end user.The study wanted to figure out how does the new simplified user interface conforms with a modern erp application.Based on the outcome of the results by all participants,the new user interface application has a well structured layout and the display output is not difficult to interpret when using it.Erp systems users are looking for application that will offer them less complex output in order for them to interpret and understand the display information.Per the scores of the conducted tests,none of the participants scored the presentation criterion with a low scale.One of the participant asserted that,he believes the new simplified interface looks simple and very responsive and he likes how the the list and layout has been

designed.he further said ,if indeed this new interface replace the old graphical user interface then, there has been improvement per his experience with some applications. The outcome of this study is in compliance with other existing findings.

For instance in the work published by Brenda et al (2013), usability evaluation of medium-size erp system.They concluded that,modern erp systems should allowed users to be able to navigate through the system,user's should be able to learn them without long training or introduction.They further opined that presentation of modern erp should be viewed positively by its user's.

In similar vein, Mahmud et al (2016), in their published work on Does usability matters.They concluded that, for organizations to maximize full usage of their erp systems,the application should be inline with usability criteria of navigation, presentation and learnability.They further believe, interface usability of navigation, presentation and learnability can significantly affects end user perception about the ease of use and concequently increase their attitude towards the use of such platforms.

Additionally, Lambech et al (2014) on their published work "Evaluating user interfaces aspect in erp systems".They concluded that mordern erp applications should conform to modern usability criteria.The findings of their work is inline with this study interms of improvement of interface usability (navigation,presentation, learnability). Once user's perceived usefulness is influenced by improvement in interface usability. Then,the user experience of such applications is enhanced for its user's.

According to Makbule (2017),on his publication on extending technology accepted model for interface usability,where he focused on SAP fiori.He concluded the new user interface fiori has seen an improvement in terms of interface usability (Navigation, Presentation and learnability) compare to the old user interface. He further concluded that, the new sap fiori offer much better experience based on the design principles of the new application and that,SAP user's can now enjoy an enhanced experience compare to the old user interface before the introduction of the new user interface platform.

Akiki et al (2016) on their work on model driven user interface where they employed reaction cards on the perceived usability of SAP user's and concluded that the new simplified user interface has seen tremendous improvement compare to the initial user interface.The outcome of their findings can also be related to this study with regard to some level of improvement after simplification.

In a nutshell,based on the findings of this study and other related works .User experience has become a requirement of modern erp applications.Vendors with an erp application which offer poor user experience will need to improve on the level of user experience in their applications.Because modern erp users are inclination to use erp products which offer better user experience that others which do not.Per the outcome of the results of this study, the author concludes,the introduction of new simplified user interface brought some level of improvement in user experience of SAP applications.

5.2 Eye-Tracking Results

The Tobii eye-tracking application was used in determining and comparing how the participants worked on each segement of their tasks.The application further revealed at what point did a participant got lost during the test period.Out of the 12 participant only 8 participants data were recorded due to some technical hitch.The recorded video helped the author to determine the amount of time participant spend on a particular session of the conducted test.The table below show the percentage level of improvement between the initial user interface and the new simplified fiori.

Improvement in End-User Efficiency after User Interface Simplification

Average Task Completion Time(In Seconds)

Table 4 Average Completion Time

User Interface	GUI	FIORI	IMPROVEMENT
HCM ONE	396.31 (sec)	637.35 (sec)	37.82%
MM ONE	474.36 (sec)	295.68 (sec)	37.67 %
HCM TWO	369.80 (sec)	220.32 (sec)	40.43 %
MM TWO	439.42 (sec)	243.66 (sec)	44.55 %

From the table above,three tasks appeared to show a decrease in average segement duration of all participants.only the task in human capital management one appeared to have an in increase in segement duration of the task between the old user interface and the new simplified user interface.For instance, in material management one there was a percentage decrease 37.67% from the old interface to the new user simplified user interface.which means if a task takes 474 sec to be accomplished, the new user interface takes 295.68 seconds to be completed.The task on human capital management two also shows a decrease in percentage of 40.43 %.So in the old user interface the segement duration of 369.80 seconds has reduced to

220.32 seconds.The last task with a decrease in segement duration was material management two with a decrease in percentage of 44.55%.In the old user interface it takes 439.42 seconds to finished material management two but the new simplified takes only 243.66 seconds to complete same tasks.Based on the above output there is a tremendous improvement in terms of percentage after simplification of the user interface.

The author further computed the percentage of improvement in the perceived usability of all participants after the introduction of the new simplified user interface.Because people have different perception,the percentage difference between the old user interface and the new simplified interface was not to level of percentage difference in segment duration.

Improvement in End-User Perceived Usability after User Interface Simplification
Average System Usability Scale

Table 5 Average system Usability scale

| User Interface	Gui	Fiori	Improvement
HCM	3.47	3.51	1.14 % increase
MM	3.59	3.65	1.65 % increase

From table above, it can be seen the level of improvement on perceived usability among particpants was not that big. But at least there was a bit differnce on the average scale of scores between the user interfaces.Human capital management had a score of 3.47 on average out of 5 in the old interface whiles the new simplified interface had score of 3.51 out 5 on the average.Material Management had an average score of 3.59 out 5 comapre to the score of 3.65 in the new user interface.Interms of percentage in improvement human capital management task had increase in percentage of 1.14 % and material management task had 1.65 percentage.Although the percentage difference is not that huge,but when it comes to perceived usability a little changes could influence the end user's attitute towards the usage of the application.Moreover small changes in perceived usability can as well improve user experience of a systems.The outcome of this improvement agrees with the work of Akiki et al,(2016), which also show similar improvement in both the segment duration and perceived usability of all participants.
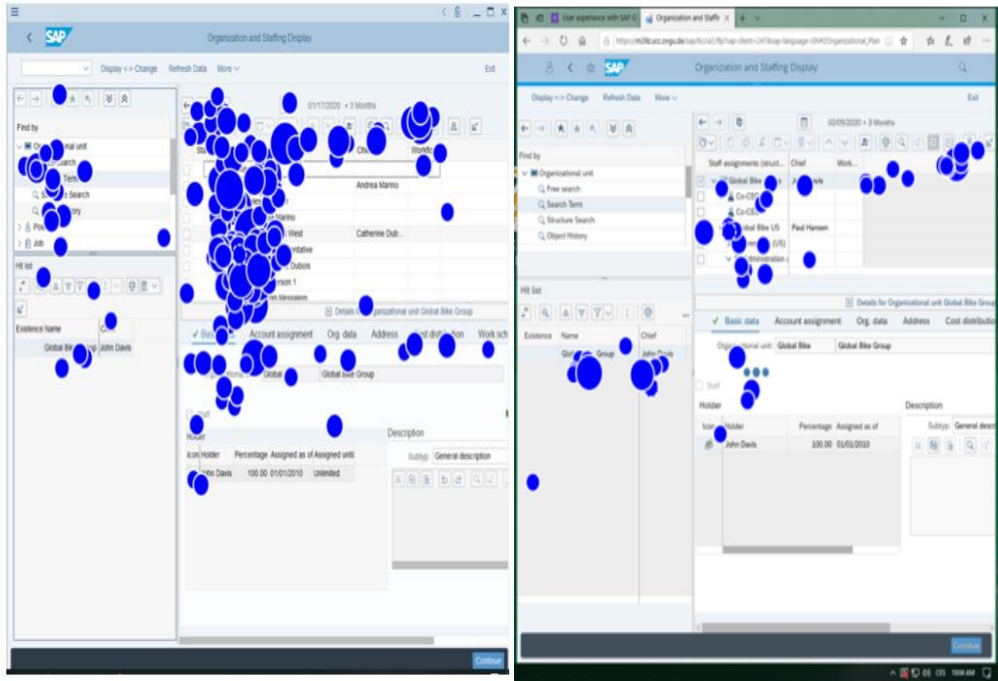
Figure 8 Gaze Plots of one participant for both user interfaces

From figure 8,the left side show the gaze plots of one participant on the old user interface whiles the right side shows gaze plots of same participant in the new simplified fiori   during the conducted tests.Comparing both gaze plots of the same participant while entering similar tasks.The number of clicks by the participant in the initial interface apeared to be more than the number of clicks on the new simplified user interface.Which implies the participant get lost whiles using the old user interface than the new user interface application.The significance of the improvement can be observe even in an average case.The level of changes can be notice visually.

Additionally,figure 9 below shows the heat maps of one participant between the initial user interface and the new simplified user interface.The left side of the figure show the heat map of the initial user interface and the right side show the heat map of same participant using the simplified user interface.The figure below display data fixation of a participant.It can be observe visually the level of improvement by the new simplified user interface compare to old user interface.
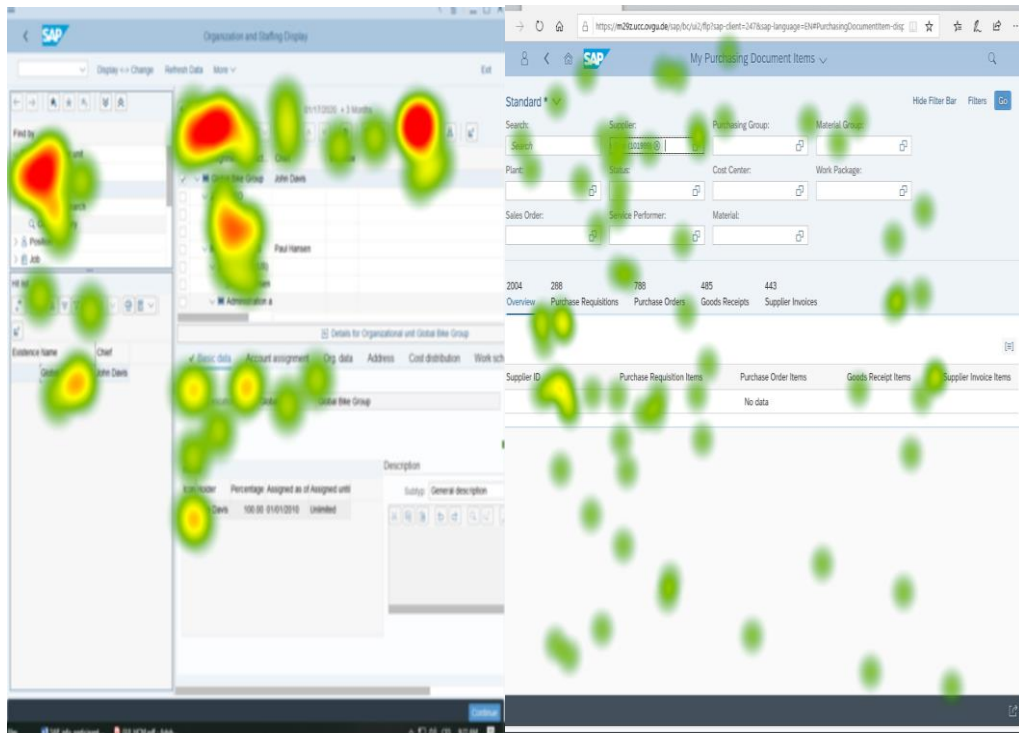
Figure 9 Heat maps showing aggregation of the participants gazing

From the figure above,it can be clearly seen from the output where participant had the highest amout of gazing.The output on the left side represent the old user interface where partticpant spend much time looking for list, because it was difficult locating the list to click in order to continue.The area marks red are the area which the participant had more gazing because he was lost during the process of the test whiles the area with green marks show low gazing by the participant.On the other hand ,the output of the heat on the right side represent the simplified user interface.

From the output,the simplified user interface represents less gazing by the participant during the conducted tests.Which means,with the new user interface the participant did not appear to have more gazing whiles using the interface.The outcome of the heat maps affirmed the level of improvement between the interfaces.

6 Conclusion

The conclusion and business recommendations are presented in this chapter.This study was conducted to answer one big question.What is the difference between the old graphical user interface and the new simplified user interface.Does the introduction of the new simplified user interface means improvement in usability? Does the new user interface comforms to Enterprise resource application usability criteria.These questions are necessary because businesses are still been skeptical about the user experience with regard to SAP Products, even after the introduction of the new simplified interface.The study used 12 pariticipants to carry out tasks in both user interface in material and human capital management.The test was carried to find out,if indeed there has been a significance improvement in the new user interface application compare to the older one.The outcome of the test focused on four elements namely segment duration,how each task was completed within a certain period of time and secondly the fixation duratiom was analysed to measures how much time participants spent focusing directly on certain points within the user interface.Thirdly the fixation count also looked into the number of times that each participants directly focused on certain points.Lastly,all participants were asked to fill the online usability questionaires forms based on the perceived usability with regard to using both user interfaces.

Interms of the outcome of the study,The following inferences has been made;

The outcome of the results revealed that,three of the tasks undertaken had significant improvement in segment duration in the new simplified user interface than the old user interface.The outcome of the results means,end user's of the new simplified user interface application will be able to accomplished their tasks in less time than using the old interface and consequently make them develop an attitude towards using the simplified user interface.Using the new simplified interface will allow user's to reach their goals quickly and implicitly improve their productivity and effectiveness.

The outcome of the fixation duration and fixation count of the participants revealed that,there was also significant inprovement in the number of times participants focused on certain points in the new simplified interface than the old one.Which means,participants get lost in the old interface as compare to the new user interface.The new simplified fiori application has been perceived by end user's, as an user interface which do not require much effort in using it and thereby allowing end user's to show more willingness toward using such platforms.

The design principles of the simplified user interface makes it easy,understandable and as a results makes its usage less complex as compare to the old user interface.

The effect of the perceived usability by all the participants on both user interface appeared to show a slight inprovement from the old user interface to the new simplified one.The outcome of the results indicate comformatity of the new sinplified user interface to modern erp criteria compare to the old grphical user interface.which means that user's perception can influenced positively the ease of use and attitude regarding the use of ERP application system.The study focused on four ERP criteria, navigation, presentation,Task support and learnability.These parameters were chosen because,they are key in improving the perceptions and attitudes regarding users of ERP applications.Among these variables the task suport came with the highest scale of 3.7 out 5 when it comes to the perceived usability of all participants in the new simplified user interface, Followed by navigation with a scale of 3.6. A higher level of perceived usability means a higher level of attitutde toward usage and that could lead to positive degree of behavioral intention towards using a platform.A slight improvement in the new simplified user interface means improvement in user experience.When an application conforms with modern erp criteria,then the usefulness of the application will be directly influenced by the perceived usability of the interfaces and this leads to remarkable changes in attitude of users towards using the application.The assertion of this study could be term as rational because ERP user's, desire to use the system if they feel using such system would will offer them excellent user experience and ultimately increase their productivy and enhance the output of their work.

In a nutshell,The findings of this study answers the question about the differences between the old user interface and the new simplified user interface.Indeed the study has affirm that,movement from the old user interface has resulted in significant level of improvement based on the outcome of the segment duration for each participant to complete a particular task within a specified period.Moreover the results of the study affirms that user's do not get lost when using the new fiori application based on the fixation duration and fixation count output from the heat maps.Furthermore,the average perceived usability of all participants posits that,the new simplified user interface comforms to ERP usability criteria better than the old graphical user interface and implicitly will offer much better experience than the old user interface.The introduction of the new application has seen some level of improvement in the user experience of SAP applications.

6.1   Recommendations

Although,the finding of the study has confirm and validate other results in the literiture.I would like to make recommendations to SAP AG's,especially the department in charge of the user experience of its current user interface application.As explained in the conclusion,even though,movemenmt from the old user interface has seen improvement interms of end-user efficiency after user interface simplification.Not all task showed signicant improvement, especially human capital mangement one shows the old user interface is more efficient than the new simplified interface.Meaning the level of improvement does not necessarily means the new user interface offers improvement across board.in order to have a uniform efficiency using the new application, more effort needs to be put in place to ensure efficiency across all tasks in the new simplified user interface.

Although the simplified interface had a higher scale compare to the old one.Most of the participants believe the fiori application support their task compare to the old user interface,then followed by navigation,presentation and learnability of the system.Most participants believed the simplified interface leads them to the system accurately interms of navigation.I think the company should also take a look at how alternative paths could be reach using the application and as well improve on the interaction between the application and the user.I agree the design elements has been well structured but the designed layout needs some improvement.In terms of presentation of the simplified user interface,I strongly agree that the presentation of the list and boxes are well structured and not soo difficult to understand.The last criteria was the learnability side of the new simplified,very few participants believes the system was too complex to learn .But generally majority believes,one does not need long introduction to be able to learn and use it.They believe it is easy to use the system.which means companies do not need to spend soo much on training of their staffs whiles using sap applications .But I believe the company should place much premium on the learnability side so to avoid them spending soo much for additional training program for their customers.So that customers can easily adopt the system without any difficulties.The company should focus on promoting the new simplified application ease of use and appealing visuality to its numerous customers.

From the finding s of the study, SAP AG can make reference as to which usability factors can influence user's perception.The results of this work may be needful to the ERP designers, when it comes to improving the usability of its interface application and as a result increase user's willingness towards using ERP system.

Additionally, in line with objectives of the study,the following recommendations   for business users.Even though SAP AG is a leading company when it comes to erp applications.Before the introduction of the simplified fiori application most of its numerous customers were not too enthused with the old graphical user interface,Although the new application has seen improvement in user experience.Modern erp users are still skeptical about the difficulties in using their applications.The findings of this study has really affirmed, the introduction of the new user interface has seen some improvement in the user experience of the new simplified application.Existing user's of sap applications has experience much better user experience than the previous user interface.Although the study did not apply any mobile device with the fiori application,One advantage that new simplified user interfaces offers is the mobile version of the application in tablet and mobile devices.The fiori mobile applications allow workers to be mobile and can work from anywhere once they have internet connectivity.Business users can take advantage of the new fiori applications by increasing their level of productivity and performance using the mobile version of the system.

Moreover, the findings of the study revealed that, all participants believed the system is not soo complex to understand and use.End user's do not need a long introduction of the application to be able to learn and use the application.which can be said to be a good news as companys do not have to spend huge in training their staffs and this would help businesses saves a lot of time and resources.

6.2   Limitation And Future Directions

Eventhough, the study is very intensive,there are some limitation that hinders on the overall study.In terms of sample size, the 12 participants was relatively very small to conduct such research.in future research a large sample of participants will be required to conduct such research.

Moreover,the study conducted involved only academic and non academic staffs.In future study , the participants could be diversified to involve individuals from outside the academic field.Because the design questionaire can be applied to any other sector.In future when the participants are diversified,the comaparison would be more feasible.

Furthermore,although the usability criteria in the literiture involves five usability criteria,in this research only navigation,presentation,learnability,task support were employed because the design case study did not make provision for customization application.In future

research all the criteria could use all together for evaluation in other ERP user experience study.

Finally,another limitation in this study is that,all the user interfaces compared are SAP A.G applications.In future research user interface application from other ERP vendors like Oracle, Microsoft could be considered and come out with findings with regard to which of the vendors offer excellent user experience regarding using their product.

In a nutshell, the outcome of this study makes a vital contribution with regard to the user experience of SAP applications and presents evidence on the improvement of their interface usability on their current system of applications.

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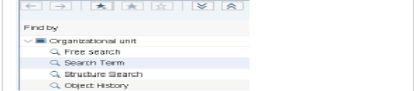
8 Appendix

Exercise Display the organizational plan of the Global Bike Group. Tim
Task Use the SAP Easy Access Menu to review the organizational plan of
the Global Bike Group.
Name (Position) Sang Cha (Personnel Administration Officer)

In order to review the organizational plan, follow the SAP Easy Access
menu path:
**Human Resources ► Organizational Management ► Organizational
Plan ► Organization and Staffing ► Display**

**To display the organizational plan, search for the Global Bike Group in
the window Find by on the left side of the screen. There, choose
Organizational unit and Search Term.**

Find by
∨ ■ Organizational unit
  Q Free search
  Q Search Term
  Q Structure Search
  Q Object History

In the following screen, in the With name entry field enter search term
Global Bike Group and press Find. The search result should be displayed
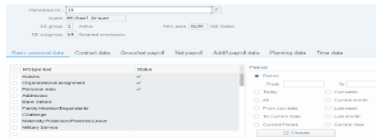in the *hit list* on the left side of the screen.

Hit list

Existence Name   Chief
           Global Bike Group   John Davis

Exercise Display a personnel master record. T
Task Use the SAP Fiori Launchpad to review a personnel master record of a
person working in the Global Bike Group.
**Name (Position)** Sang Cha (Personnel Administration Officer)

In order to display a personnel master record, follow the SAP Fiori
Launchpad *Display Personnel Master Record*.

Display Personnel
Master Record

You should see the *Display HR Master Data* screen. Type in **15** as the
Personnel no. and press Enter. The system displays general organizational
data of the employee and all InfoTypes. InfoTypes for which data is
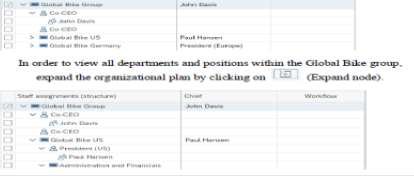maintained are marked with ✓.

Then, highlight the *Organizational Assignment* InfoType and press Display.
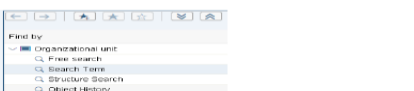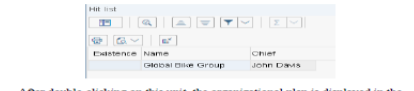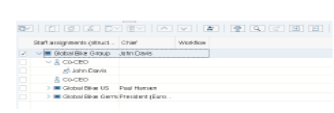

After double-clicking on this unit, the organizational plan is displayed in the
structural view on the right side of the screen.

In order to view all departments and positions within the Global Bike group,
expand the organizational plan by clicking on ⊡ (Expand node).

Staff assignments (structure)	Chief	Workflow
☑ ∨ ■ Global Bike Group	John Davis	
☐ ∨ ♟ Co-CEO		
☐ ♟ John Davis		
☐ ♟ Co-CEO		
☐ ∨ ■ Global Bike US	Paul Hansen	
☐ ∨ ♟ President (US)		
☐ ♟ Paul Hansen		
☐ Administration and Financials		

Organizational units are represented by ■ icons, while positions are
displayed as ♟. Persons that staff regular positions are represented by the
♙ icon.

With the help of this information, please answer the following questions:
How many positions are planned for the organizational unit Sales Area US
West? _____

Does the Software department have a head of department? _____

In the organizational plan, go to **Global Bike US ► Administration and
Financials** and double-click on the Financials Department.

Find by
∨ Organizational unit
  Q Free search
  Q Search Term
  Q Structure Search
  Q Object History

In the following screen, in the *With name* entry field enter search term Global
Bike Group and press Find. The search result should be displayed in the *Hit list*
on the left side of the screen.

Hit list

Existence Name   Chief
           Global Bike Group   John Davis

After double-clicking on this unit, the organizational plan is displayed in the
structural view on the right side of the screen.

Staff assignments (structure)	Chief	Workflow
■ Global Bike Group	John Davis	
∨ ♟ Co-CEO		
♟ John Davis		
♟ Co-CEO		
> ■ Global Bike US	Paul Hansen	
> ■ Global Bike Germany	President (Europe)	

In order to view all departments and positions within the Global Bike group,
expand the organizational plan by clicking on ⊡ (Expand node).

Staff assignments (structure)	Chief	Workflow
■ Global Bike Group	John Davis	
∨ ♟ Co-CEO		
♟ John Davis		
♟ Co-CEO		
∨ ■ Global Bike US	Paul Hansen	
∨ ♟ President (US)		
♟ Paul Hansen		
∨ ■ Administration and Financials		

User experience with SAP GUI and SAP Fiori

QUESTIONNAIRES

(Please check √ only one answer)

Your Id Number Please

Choose

Gender

☐ Female   ☐ Male

Study Program

☐ Business or economics   ☐ informatics   ☐ Public administration   ☐ other ,

You are currently working

☐ Part time   ☐ Full Time   ☐ Not working

Age

☐ 18-19 years   ☐ 20-24 years   ☐ 25-29 years   ☐ 30-34 years   ☐ 35-39 years

Experience with ERP SYSTEMS

☐ Less than 3 months   ☐ 3-12 months   ☐ 1-3 years   ☐ more than 3 years   ☐ none

Education Level (Highest Degree you have completed

☐ Bachelors Degree   ☐ Masters Degree   Doctoral Degree

Please check the most appropriate option for each statement below based on your previous user experience.

1: Strongly Disagree 2: Disagree 3: Slightly Agree 4:Agree 5:Strongly Agree

1. Information can be easily accessed.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

2. The user interface supports efficient and accurate navigation of the system

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

3. The system supports alternative navigation paths.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

4. The information provided by the system is understandable.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

5. The layout of fields, lists and boxes are easy to understand and well structured

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

6. The output is easy to understand and interpret.

1 ☐   2   ☐ 3   ☐ 4   5 ☐
        ☐

7. A user can learn how to use the system without a long introduction.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

8. The various functions of the system can be identified by exploration.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

9. The system is exhausting and complex to learn and use.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

10. The application supports in carrying out a task.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

Please check the most appropriate option for each statement below based on your previous user experience.

1: Strongly Disagree 2: Disagree 3: Slightly Agree 4:Agree 5:Strongly Agree

1. Information can be easily accessed.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

2. The user interface supports efficient and accurate navigation of the system

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

3. The system supports alternative navigation paths.

1☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

4. The information provided by the system is understandable.

1 ☐   ☐2   ☐3   ☐ 4   5 ☐

5. The layout of fields, lists and boxes are easy to understand and well structured

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

6. The output is easy to understand and interpret.

1 ☐   ☐ 2   ☐3   ☐ 4   5 ☐

7. A user can learn how to use the system without a long introduction.

1 ☐   ☐ 2   ☐3   ☐ 4   5 ☐

8. The various functions of the system can be identified by exploration.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

9. The system is exhausting and complex to learn and use.

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10. The application supports in carrying out a task.

1 ☐   ☐ 2   ☐ 3   ☐4   5 ☐

Please check the most appropriate option for each statement below based on your previous user experience.

1: Strongly Disagree 2: Disagree 3: Slightly Agree 4:Agree 5:Strongly Agree

1. Information can be easily accessed.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

2. The user interface supports efficient and accurate navigation of the system

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

3. The system supports alternative navigation paths.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

4. The information provided by the system is understandable.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

5. The layout of fields, lists and boxes are easy to understand and well structured

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

6. The output is easy to understand and interpret.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐
           ☐

7. A user can learn how to use the system without a long introduction.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

8. The various functions of the system can be identified by exploration.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

9. The system is exhausting and complex to learn and use.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

10. The application supports in carrying out a task.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

Please check the most appropriate option for each statement below based on your previous user experience.

1: Strongly Disagree 2: Disagree 3: Slightly Agree 4:Agree 5:Strongly Agree

1. Information can be easily accessed.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

2. The user interface supports efficient and accurate navigation of the system

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

3. The system supports alternative navigation paths.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

4. The information provided by the system is understandable.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

5. The layout of fields, lists and boxes are easy to understand and well structured

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

6. The output is easy to understand and interpret.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐

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10. The application supports in carrying out a task.

1 ☐   ☐ 2   ☐ 3   ☐ 4   5 ☐