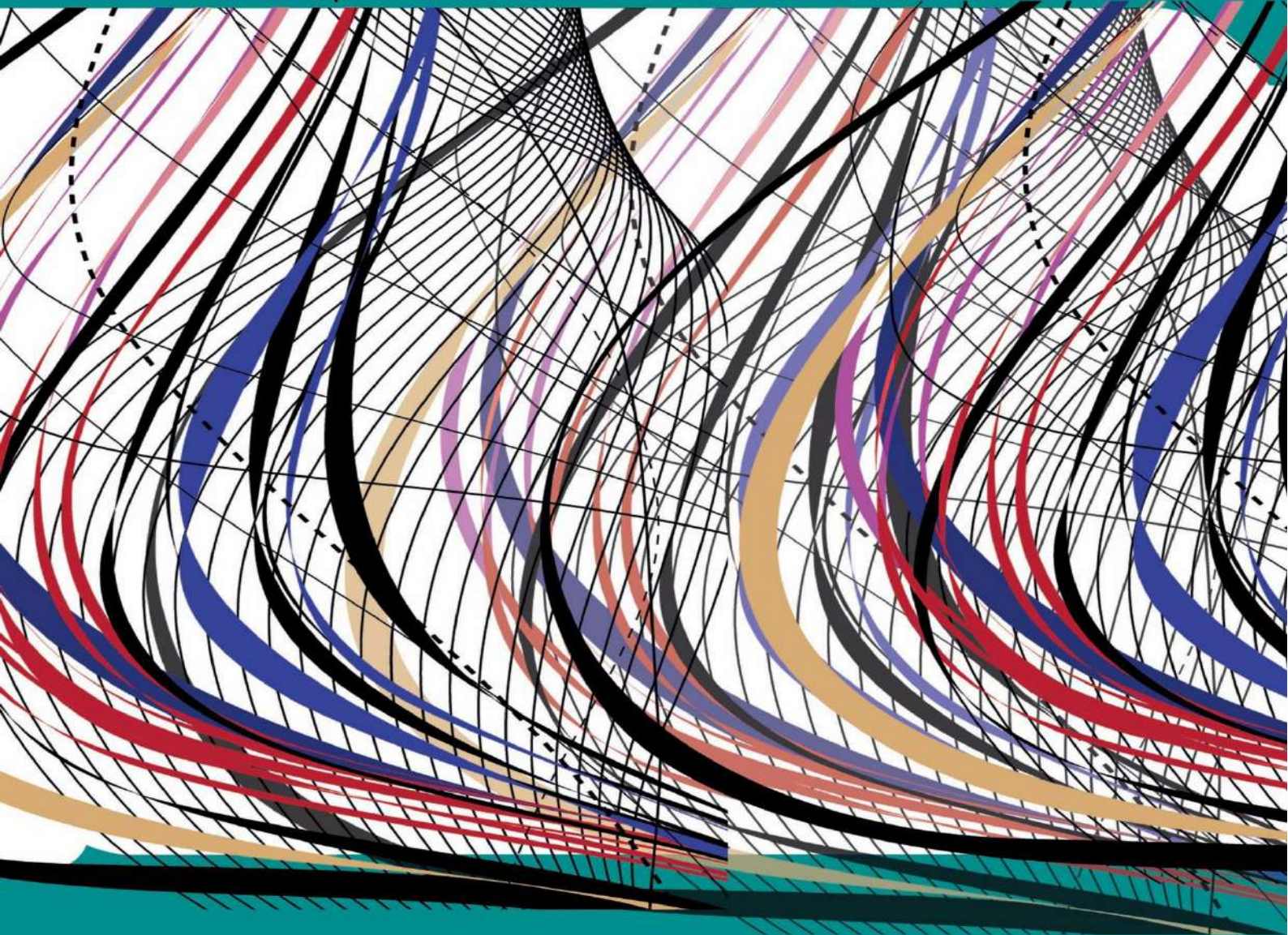


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The Role of Farmers' Tenure in Securing Loans: The Case of the Philippines' 'Hiraman' Agreement among Farmers

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Abstract— This study aimed at exploring the role of farmers' tenure in securing a loan, specifically the 'hiraman' agreement among farmers. A sample of 50 respondents was randomly selected and the data were collected mainly through a questionnaire. A descriptive research design was used to analyse and interpret the data collected. The findings revealed that hiraman agreements among farmers are common in a certain area of the Philippines. Most of the borrowers who joined this agreement are farmers who have a tenure as tenants, followed by the farmers who are registered owners/partly owners. It also revealed that there were no farmworkers/laborers that have been entered into this agreement as their role is primarily for the cultivation only, such as planting, growing, harvesting, etc. Furthermore, the study showed the unique characteristics of the agreement and the major reasons for the farmer availing of and securing this loan. However, farmers still encountered constraints during the agreement such as uncertainties in the legal rights of the borrower, and the unavailability of payment instalments. Hence, conducting sustainability training and seminars for resource efficiency, intensification of the subsidy programs, and increasing the presence of formal institutions in the areato help increase the farmers' income is highly recommended.

Keywords— Farmers, farm tenure, 'hiraman' agreement, informal loans.

I. INTRODUCTION

Agriculture greatly contributes to the growth of the Philippines economy as it is the backbone of society. It has been rapidly changing for the past decades and is significantly influenced by innovation, diversification, and liberalization. Among these changes is the emergence of diversified financial institutions wherein the government intensified its lending and/or credit programs to help the agriculture sector, particularly the smallholders. About 92% of the small farmers and fisherfolks are aware of credit from banks, 83% are aware of credit services from microfinance institutions and cooperatives, 73% felt the need to borrow but only 17% actually availed [1]. Despite these efforts, farmers are still accessing financial help from informal loans while others consider it a good but risky investment.

Formal and informal finance coexist in markets with weak legal institutions and low levels of income [2]. One of the

informal loans known in some rural areas is the 'hiraman' agreement among farmers. *Hiraman* as the smallholder prefer to call the Filipino term for borrowing and is often known as 'sangla' which emerged in 1970. It is the type of loan where a farmer/landowner borrows a large sum of money from one farmer/landowner in exchange for allowing the latter to borrow and cultivate the land of the former that will be used for agricultural purposes for a minimum of two (2) years or until the repayment. Likewise, there are 5.56 million farms/holdings covering 7.19 million hectares in the country reported by the 2012 Census of Agriculture (CA), and 99% of them were operated by households or individual persons [3]. These were farms with different land tenure in which three out of five farms were fully owned or in owner-like possession, about 15% were tenanted, 8% were rented free and 3% were leased/rented [3]. Land tenure systems determine who can use what resources for how long, and under what

conditions [6]. Moreover, about 3.83 million (49 percent) farms were reported to have been used under temporary crops (such as palay, corn, etc.) and Central Luzon is one of the top provinces devoted to these [3].

However, the price of palay dropped due to the surge of import of agricultural products which is the immediate aftermath of the implementation of the rice tariffication law (RTL) or Republic Act (RA) 11203 that streamlined the process of acquiring import permits and replaced quantitative restrictions on rice imports. As a result, farmers are worse off as it leads to a 1.8 percentage point reduction in their income, a fall in palay output as well as area harvested [7]. Moreover, Fertilizer prices have been rising since May 2021 mainly due to larger demand from countries, and the latest data from the Fertilizer and Pesticide Authority (FPA) showed that the average retail price of the fertilizers (urea, ammosul, complete and ammophos) as of October 2021 has recorded a 37% - 83% increase per 50-kilo bag from the same period last year [4] and [5]. The steadily rising price of farm inputs such as fertilizers and fuel worsens the current situation of all farmers, and they are afraid that current subsidies from the government aren't enough to cover their financial losses and that today they would have to cope with the higher production costs.

Farmers face many types of risks, from the natural calamities, limited financial capital and volatility prices in the market. Such unpredictability has implications for their behavior, well-being, resource allocation, investment and financing decisions. The money, time, and effort they put into starting and operating a farm as well as lending money is a hard-earned investment since farming is an economic activity that requires capital regardless of its scale. Hence, the depressed price of their products and skyrocketing cost of farm inputs made farmers into debt-bondage which may result in the renting, loaning or even selling of their farms as farming will not be profitable enough to cover their financial losses, debts and needs. Assessing the role of farmers' occupancy in securing loans is the aim of this study. Despite the improved access to finance, the number of farmers accessing informal loans is very evident in certain areas of the province, specifically the *hiraman* agreement, and the numbers were observed to be growing these past few months after the last harvest, thus, the researcher finds relevance in conducting the study.

The study specifically sought to describe the farmers' current loan status in terms of *hiraman* agreement and the significant relationship between their type of tenure/occupancy as a borrower. It also aimed to describe the characteristics of the *Hiraman* Agreement, the reasons farmers in securing it and the constraints encountered

among them. Furthermore, the proponents aimed to recommend a solution based on the findings of the study.

II. METHODOLOGY

The study utilized the descriptive research method in describing the characteristics of the variables. Simple random sampling is the technique used to randomly select the target respondents of 50 farmers in a certain area of Nueva Ecija, Philippines. Moreover, the researcher conducted the survey during the distribution of seeds for the 2021 dry season in the Municipal Agriculture Office with permission from the good office and respondents, it is the time when farmers from different barangays gathered. The data were collected using structured questionnaires and were analyzed using descriptive statistics such as percentage, frequency, and ranking. A survey approach was used and interviews were conducted to provide in-depth experiences and detailed information about the experiences of the respondents.

III. RESULTS AND DISCUSSIONS

1. Describe the farmers' current loan status in terms of *hiraman* agreement and the significant relationship of their type of tenure/occupancy as a borrower.

Table 1 Respondents who Availed the 'Hiraman' Agreement

Response	Frequency	Percentage
Yes	22	44%
No	28	56%
Total	50	100

Table 1 shows that 56% of the respondents are not currently associated with *hiraman* agreement, but it doesn't mean that they didn't avail it in the past and don't have any existing loans from other formal and informal sources. On the other hand, 44% of them currently availed of the said agreement.

Table 2 Loan Status of Farmers

Status	Frequency	Percentage
Old – present	14	64%
New	8	36%
Total	22	100%

Table 2 illustrates that out of the 22 respondents who availed *hiraman* agreement, 64% were already having an

existing loan from the previous years up to the present, while 36% are new and were made right after the last harvest season.

Table 3 Number of Borrowers According to Farmers' Tenure

Type of Farm Tenure	Frequency	Percentage
Registered/Partly Owner	5	23%
Tenant	13	59%
Lessee	4	18%
Farm worker/laborer	-	-
Total	22	100%

Table 3 represent the number of farmers as borrower under this agreement according to their type of tenure. It showed that out of the 22 farmers as borrowers, about 59% of them are tenants and included here are those who still don't have a land title but have an actual right/possession of the land, followed by the registered/partly owner with 23%, and 18% of the lessee. Farmworkers/laborers don't enter into *hiraman* agreement as they don't own the land and their role mainly focuses on the cultivation of crops – from planting until harvesting for which they are paid.

2. Describe the characteristics of the *hiraman* agreement

Table 4 Characteristics of the *Hiraman* Agreement

Characteristic	Frequency		Percentage		Total	
	Yes	No	Yes	No	F	%
The simplicity of the agreement	22	0	100%	0%	22	100%
Trust and confidence of both parties	19	3	86%	14%	22	100%
Convenience, quick service, and flexible	22	0	100%	0%	22	100%
Cultivation rights are not forfeited in case of non-payment	22	0	100%	0%	22	100%
The farmer who has an actual	18	4	82%	18%	22	100%

right/possession of the land can avail of the loan						
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Table 4 shows that one of the unique characteristics of the agreement is its simplicity where it is constructed in simple Filipino words that every farmer can understand and consist of one (1) page only. The written agreement can be made and signed between the parties in front of at least two witnesses and/or in the barangay office - sealed and signed by the Brgy. Chairman with the corresponding fee. Likewise, 100% of the respondents agreed that the process is quick, convenient, and flexible in terms of repayment since farmers under this agreement often have close proximity with each other. In addition, according to the 100% of the respondents, the cultivation rights don't forfeit in the event of loan default as the contract is continuous until its repayment which has no interest and with the understanding from both parties that the turnover of land should be after the planted crops are harvested. Most farmers belong to the same community, thus 86% of them believed that the trust and confidence they have as they know each other personally is one of its foundations. They tend to borrow money or lend it to the person whom they know personally. Moreover, 82% said that they can avail of the loan even without land title provided that they have the actual right/possession of the land, however, the amount that they can loan is limited only as they are not yet the owner.

3. Describe the reasons farmers in securing the 'hiraman' agreement and the constraints encountered among them.

Table 5. Reasons for Borrowing Money

Reasons	Frequency	Rank
Strong financial needs (personal/family)	35	1
No or little income from the harvest	33	2
Payment of debts and/or loans	25	3
Need for large capital to start a new business	8	4

*multiple responses

There are several factors as to why farmers borrowed a lump sum of money from their co-farmers instead of the formal financial institutions. Most formal institutions offered loans with specific purposes and conditions and

there were times that farmers faced problems that immediately needed a large sum of money for their personal and/or family use. Secondly, there is no or little amount of income from the last harvest to cover their production costs for the next season, which is caused by the drop of palay price and the drastic increase of the farm inputs. Moreover, farmers have existing debt and/or loans that they expected to pay, but unfortunately cannot repay, thus, they tend to borrow money from different sources. And lastly, the need for large capital to venture into new business or investment drives them to avail it.

Table 6. Reasons for Lending Money to Borrow Land

Reasons	Frequency	Rank
Additional investment	26	2
There's a remaining surplus	27	1
New and keen to try agricultural production	3	4
Location and quality of land	24	3

*multiple responses

Despite the uncertainties, current problems and challenges encountered [8] by the agriculture sectors, some farmers are taking the risks in entering and/or expanding their business by lending money to their co-farmers with no interest as they have a remaining surplus to borrow the land mainly for agriculture purposes. Secondly, they also consider it as their additional investment/business to continuously support their financial needs. In addition, the location and quality of land drive other farmers to invest as it will greatly affect their productivity. Some farmers have shown small interest in trying agricultural production as the reason to invest.

Table 7. Constraints Encountered in 'Hiraman' Agreement among Farmers

Constraints	Frequency	Rank
Quality or type of land	7	4
The amount of the loan cannot be paid by instalments	18	2
Lack of ownership document	11	3
Uncertainty in the legality of rights, Family conflict of rights/interest	31	1

*multiple responses

The uncertainty in the legality of rights and conflict of interest among the family of the borrower ranked first to be the constraints among farmers in this agreement. Moreover, since the loan cannot be paid by instalments, it

often results in the extension of the contract with some adjustment in the duration as well as the loan amount. Lack of ownership documents can also hinder the farmers in terms of the amount they need. It also showed that farmers view the quality or type of land before making the decision to borrow it.

IV. CONCLUSIONS AND RECOMMENDATIONS

Although there are formal financial institutions today that offer and deliver loan services to smallholder farmers, many of them still access capital informally. Thus, it will continue to increase as long as there are no positive changes in the income of the farmers. Moreover, the *hiraman* agreement is normally practiced among farmers living in rural areas and most of them often have close proximity or personally know each other before making the agreement. Hence, farmers know the present economic condition of their co-farmers. Furthermore, this agreement has unique characteristics that most formal institutions cannot offer and it gives a chance to farmers who lack land ownership title but have been in farming for a long period of time to avail of the loan, provided that he/she has an actual right/possession of the land. Lending money to borrow land is also a very risky investment for other farmers, especially at this time when the prices are very volatile in addition to the natural calamities brought by climate change. Farmers who invest in borrowing the land may return it to the owner if he/she sees that farming is not profitable enough.

The study suggests that there's a great need to improve the income of the smallholders to prevent them from debt-bondage. Likewise, this study has valuable financial associations, particularly with the farmers [9]. Sustainability training and seminars, and farmers' empowerment [10] would help them to become resource-efficient and be knowledgeable in reducing their cost of production. Hands-on training is recommended on this as farmers can integrate its application into reality. Moreover, the government may take a look and assess this agreement and its possible problems that may cause the land rights of the people. It is also recommended to increase the presence of formal institutions in the community and as well as provide a seminar for farmers to become financially wise in managing their farms. In addition, intensifying the subsidy program is beneficial, especially in the present economic condition of the agriculture sector where input prices increase and the price of output decreases.

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Design and Implementation of Job Recommendation Application 'Jobs-360' for Job Seekers and Employers using Flutter

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Abstract— Top companies are recruiting people online and during and after covid, they work from home. Most of the recruiting companies select people by conducting online test and interviews. Likewise, job seekers also choose jobs online through online portals. Job recruitments nowadays become a very important and fundamental process for industries like Information Technology, Government, and private sectors. The web-based applications caused a substantial impact on the recruitment process. The implementation of online recruiting platforms has become a primary recruitment channel in most companies. While companies established job positions on these portals, job-seeker uses them to publish their profiles. Online recruitment platforms accomplished clear advantages for both employers and job-seekers by reducing the recruitment time and advertisement cost. There are certain recommendation systems available on the internet to support the users in searching for their requirements that match their preferences. A wide range of smart phone applications is popular to deal with all sorts of user's requirements. To improve the e-recruiting functionality, many job recommendation systems have been proposed. This paper analyzes and develop a job application process and related issues for building personalized recommendation systems for job-seekers by an application called 'JOBS-360'.

Keywords— Job recommendation, Cross-platform Library, ADB, AVD, ML, Flutter

I. INTRODUCTION

Every graduate will experience a situation where they have to decide their job requirements like salary estimate, company, etc. based on their skills in a particular field. This is one of the tough tasks which include a lot of transportation and communications to collect information about jobs and its requirements which should also be suitable and match their need. For an average, it will take a few months just to sort out the required jobs. And the further process of resume preparation which should display their skills and the job application process will push them into

mental stress. But all this is fulfilled by this recommendation system just with one tap.

The job recommendation app will help in many ways to choose the job offered by various employers. For job seekers, it will help to highlight their skills and qualification easily and get their suitable jobs with just spending a very little time. This reduces their head-ache of collecting information about job offers and recruiters need which will waste their time. For job employers, their main part of recruiting is made simple as they get clear data of all their job candidate's unique skills. This will help their

industry to get suitable employees and further reduce their investment in advertisements and job posters.

This app mainly helps them in the reduction of time spend on the above difficult processes. For job recruiters and employers, they need to get a clear vision of their candidate's unique skills and qualifications. Generally, they need to invest a lot just to aware of all job seekers. Even though this seems effective it cannot assure that it will get to people of all areas. Before this, they have to recruit a perfect employee for a given job which decides the industry's productivity and marketing. Although there are many applications in job recommendation, most of them lack filters and other factors like design, requirements, etc.

The proposed solution is a cross-platform (Android and iOS) mobile application, "Jobs 360" which overcomes the above-mentioned limitations by helping job seekers in recommending them a suitable job based on their input skills, requirements, and qualifications. Also, for job employers by creating an efficient e-recruitment process which is very important for every industry. The first and foremost thing is to ensure smooth app flow in all mobile OS. This is thoroughly verified as a whole application is designed using the Flutter Software development kit [1] developed by google which specifies itself as cross-platform, both android and iOS app development tools. Secondly, most job seekers need to show the recruiter's experience level and skills. For that this app has a filter which contains almost all employer's need which mainly reduces their time sorting out suitable jobs. Like the same recruiters also get enough details on their candidates' skill sets and others. User can also search for a particular job or company irrespective of filters they have sorted helping to get through their wish. Overall, this app ensures creating a perfect cycle for job seekers and employers to meet their needs and requirements fulfilled without involving any waste of time and money.

II. RELATED WORK

Nowadays there are many mobile and web-based applications that search and recommend jobs for its users. An app 'Monster jobs' [2] is similar to this app but lacks in variety of filters for job applicants and also an app 'Glass door', but it didn't concentrate on entry-level and intern jobs.

These apps mainly get down while providing smooth flow and equal features to all mobile users of different OS. But due to 'Jobs 360' flutter dependency

ensures its equality over the different OS and hence solving this major issue.

Two of the topmost apps i.e. 'LinkedIn' [3] and 'Naukri' [4] have overcome many common issues. But they lack in providing full-efficiency to all its user. This is because of its premium feature which is quite unaffordable to some people but 'Jobs 360' provides all the features as free to all its users. Also, some of these existing apps create minor difficulty for its user by quite complicated UI design that is there are not user-friendly. So, for this case, 'Jobs 360' is simpler and clearer compared to others making it a user-friendly UI design.

III. DESIGN OF 'JOBS-360'

The application needs some software which makes it work properly without any errors. There are many types of requirements [5-10]. These are briefly listed below.

3.1 Requirement Specifications

- Data Requirements

For this implementation, some data requirements will ensure a smooth flow of the application. So, the main data required is login credentials which are used to create an account for the user. Without the login process, the application will not work properly

- Functional Requirements

Any user of this application needs a base to run this application. Their device should get all the features of the application without any malfunction. For this either they need the apk of the application to install it or need to download it directly from play store. Further to use the application, they need to input some basic requirements which in term creates an account and makes the user get the application and all its features.

- Non-Functional Requirements

An important requirement for the application to run what exactly the developer designed is the performance of the app irrespective of the platform to be used. Here performance means a few skills of the device which is used to run the application. These are listed as scalability, responsiveness, use-ability, reliability, network coverage, etc. Scalability means that the app should able to adapt itself to increased usage or able to handle more data as time progress. For example, when the user data (caches, stored data, etc) increases app should be able to handle them without delay by optimizing the way storage is done and accessed. Finally, the most important is the network requirement i.e. the app should get a good

internet connection because the whole running of the application needs net/wi-fi connection like connecting to the database for user login and fetching other details. So, these are some basic Non-Functional Requirements to get a smooth user-experience of this application.

- System Requirements

The application needs a device where the Operating System (OS) is either Android or iOS. The minimum requirement is that the version of OS used. So, the app runs on every device with android Jelly Bean version v16, 4.1.x or newer, and iOS 8 or newer. And also, in iOS devices (iPhone 4S or newer) and x86 ARM Android devices. It also runs in Android emulators and the iOS simulator. These are some basic minimum requirements that will help in running the app without any error during the working/running of the application.

3.2 Design Approach

This work is developed by designing each page and analyzing its requirements which makes the implementation and execution simple and clear [11]. For making this basic project design every main functionality is classified and separated as modules that are effective in displaying the whole project design as an easy one. So, this modular design is good in explaining every aspect of the project. These modules are executed together resulting in flawless application flow. As mentioned above, every module of the project is explained in detail below:

3.2.1 User Registration

The main and primary function of the app is creating a user account. This is done by getting some validated and verified user inputs such as username, email, password and securely inserting it into the database system. This is used every time to fetch the given details and verify the user. This lies as the foundation of the application.

3.2.2 User Login

Every user of the application must have to log in to use the application. This needs some input which should exactly match with the credentials that they have entered while registering. If it fails, they cannot authenticate. For this function the code is written as such it will be secure from some main exploitations and flaws.

3.2.3 Listing and Navigation

The main screen and its routes come under this module. This module executes the main purpose of this application. So, this has many parts. First, it displays the job lists in form of cards with the required job details. When we come to routes, we have almost all the navigation from this page/ screen. From this, it takes the

user to filters, the search bar in the form of navigation bar buttons, and the about page in the form of an app bar icon button. The main code of the application is used to design and develop this functional module. Apart from this, there are many sub-modules but all these will shelter under this main app module

3.3 Application Design

While putting all the modular design into a single frame refers to application design. To represent anything in a single frame, the flow diagram is the best of all due to its simplicity. Below is the main workflow diagram of the application.

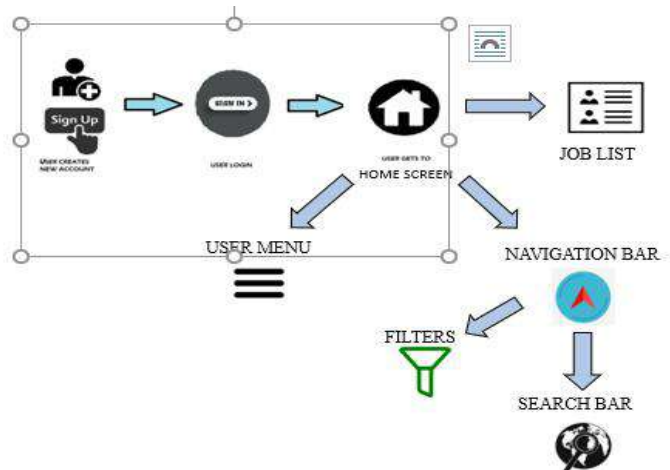


Fig.1: Workflow diagram of the application

Figure 1 is the general workflow which will be common for every user. Certain tasks can be performed by users. These can be neatly explained in the form of a diagram. Figure 2 lists out the user's tasks list.

3.4 User-Interface (UI) Design

A user-friendly UI design is the most preferred for any of its users. This application has a clear and simple [12]. The application has many screens like sign-up, login, home screens, etc. Each of these screens is said to be user-friendly because each of its functions like input seeking fields and navigation details of the buttons is respectively with the hint and label text which prevents users from accidentally misleading to any different pages other than their need. For example, the home screen of the application specifies all its routes and button functions clearly to the user. Figure 2, 3 are the images of the home screen.



Fig.2, 3: Components of home screen

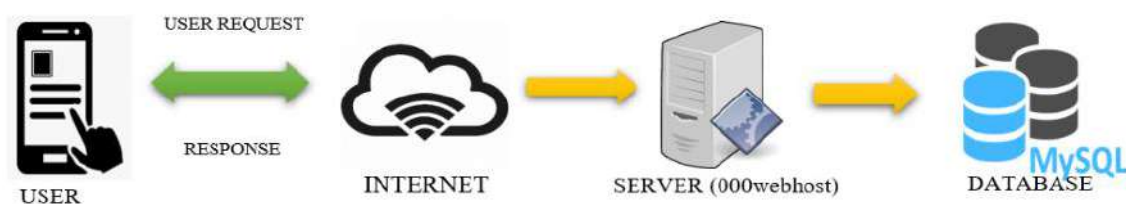


Fig.4: Flow diagram for login process

3.6 Methodology

The application development is closely linked with the software development life-cycle (SDLC). There are some basic stages of SDLC. This application is developed using the 'waterfall' model. The background of the model is planning and sequence. The whole project is mapped out in the planning and analysis stages. This application also has a plan and is executed in sequence. The entire application is built, and then it is all tested to make sure that it is working properly. In this model, the requirements are clear and both developers and users have a unified and clear vision about the result. The project requirement is to recommend a suitable job for the user based on the inputs provided and this is all needed for both user and developer. This model is used in a wide range because it is very meticulous and it's also a good application method to use for big projects that need to have one unified vision. The

This article can be downloaded from here: www.ijaems.com

3.5 Database Design

The database of the application is designed in such a way that it can be easily processed. Simple the structural design fast is the running of the application. So, it is made clear that the manipulations can be performed easily. This implementation does a specific set of operations like creation, selection, etc. with the database. MySQL [5] is the database used which is a free and open-source relation database management system (RDBMS). The database is hosted remotely using a web service. This project uses 000webhost [6] powered by Hostinger which is free and also able to perform all web-based hosting. This acts as receiver and sender of the data which interacts with application and database. This service communicates via HTTP protocol [13]. From the application side, the project uses a special in-built package of flutter framework known as 'http'. As all the parsing of data is done through JSON format, the application uses one of the best server-side programming language Hypertext Pre-processor (PHP) for connecting with the database and also executing structured queries to manipulate the database. First, the written PHP code is hosted using the web service and it is used in the flutter framework through 'http' package [14-15].

advantages of this model are it forces structured organizations, allows for an early design change.

IV. IMPLEMENTATION OF THE APP USING FLUTTER

4.1 Flutter Software Development Kit (SDK)

Flutter is an open-source UI SDK created by Google. It uses Dart for its single codebase feature. It is used in the project for its advantages like hot reload, hot restart, widget-based coding, the composition of classes and functions. One of the cool features of flutter is the hot reload which attracts all the developers. Hot reload means that the changes made by the developers can be seen instantaneously with Hot Reload. This feature is designed mainly for developers as it makes the changes visible within the app itself. As the changes made are visible

within seconds, developers can fix the bugs in no time. So, for every simple change in the code, we can see the differences in the output within some milliseconds. This helps in faster development of required output without errors and warnings.

4.2 Android Debug Bridge (ADB)

Flutter uses ADB as a tool to connect with physical android or iOS devices and also with emulators which can be used to run our application. This helps to check the flow of the application and detect errors. Later we can debug and rectify them depending on our needs. As flutter supports the hot reload feature, for every change in the code and application we can view the results.

V. RESULTS AND DISCUSSION

5.1 User Interface Representation

The application contains many new and cool features making it a user-friendly one. These new features make the application more interactive and quicker responsive one. As flutter supports many good widgets most of them have been used well in this application. There are many features in this application and these need some approach like what are the requirements, usage, etc. So, every screen and its features are explained in brief below:

5.2 Splash Screen

This application has a splash screen as an introduction to this app. This splash screen uses some animation like a shimmer effect along with the app title which will provide the user with a good experience. This will provide a hint to the user about the application's standard and the basic user interface design. The image of the splash screen is given below in figure 6.

5.2.1 User Registration

As mentioned in the above topics the user needs to create an account. This is the starting function of the application. This page starts the first interaction with the user. Here there are 2 options for the user either they have to create their account if they don't have one or they can simply skip this step and proceed to login with the already created account. For user registration, certain details are needed as input from the user. This screen gets the email id, username, password from the user in the form text input field, and after that, there is a button that submits the inputs which are in turn taken to the database for the user with the help of PHP through the internet. One important thing is that this process needs network connectivity or internet access either through mobile data or Wi-Fi with a stable and good connection.



Fig.5: Image of Card Dismission



Fig.6: Image of Splash Screen



Fig.7: Image of Sign-up Screen

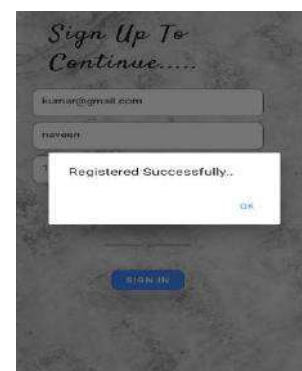


Fig.8: Validation of User Sign-up

The user needs to get the confirmation that the account has been created and registered with the given inputs as a username and password. In some cases, the username or email id may already exist so this detail needs to be conveyed to the user. This is displayed in the dialogue box and further action buttons. This validation process for instance if it registered successfully it displays in the dialogue box which is given in below image

5.2.2 User Login

In all cases after the registration page, the login page appears for every user. This page prompts the user for two inputs that is username and password in the respective text input field. Both of these fields have text editors that are comfortable for the user to edit input values. Same as in the case of user registration this page also has a validation part. This validation is important as strangers can get into other accounts with incorrect credentials. So, this page also displays about login status in a dialogue box after pressing the login button. The dialogue box also states which data is entered incorrectly making it easy for the user to understand the problem.

5.2.3 Home Screen

After the user login process the main page that is the home screen of the application appears. This home page consists of different parts. Each part performs various tasks based on user requests. These parts are explained in detail below.

5.2.3.1 Job Recommendation Cards

After all the login steps, the home page appears. The main content of the page is job recommendations and other sub-tasks and functions. For every user, there are certain job recommendations. But these can be customized depending on their inputs like salary estimate, job type, and experience level through filters. But before changing filters there are default job recommendations that fill this home screen.



Fig.9: Image of Job Recommendations



Fig.10: Image of Job Filters

These job recommendations are listed in the form of dismissible cards which contains enough details for users to choose. These cards give a quick overview of listed jobs like job title, date created, location, etc. If user interested in any particular job, if they click the card, it automatically gives either a brief description job and its features or simply redirect to the website of job offering company where they can directly apply for that job through their official website. This depends on the type of job and the company offering it. If there are some unwanted jobs displayed the user can simply swipe to remove it from the page. In case if the user needs more different jobs, they can refresh by pulling from top to bottom which updates the job and its respective details. So, for every refresh, the job cards keep on updating proving a vast variety of jobs to the user of the application.

5.2.3.2 Navigation Bar

In this application, user can get the best job based on their requirements like salary, type, etc. and they look for jobs that fulfil their qualification. So, the application needs to get some input from which the suitable jobs are recommended. The user may need to change their requirements frequently. For this, the application has the feature filter in the navigation bar which is at the bottom of the application on every page so that they can access it easily from any part of the screen or page of the application. This filter contains many inputs like job type where it is in the form of checkboxes. The user needs to simply tick their type and salary input is in the form of a range value slider where the user can set their job salary value with a minimum and maximum value. For experience level, they need to choose from listed options. These properties of image filters are shown in Figure 11. Apart from filters, the user needs some manual customization, for example, some users may need a job from a particular job offering company or salary or location of the job. To make this comfortable for the user the application is also provided with a search option where users can search for different available companies, salary

range, location, etc. This is enabled when they press the search button in the navigation bar. The search bar input is also in text editing type so that they can edit based on their need.

5.2.3.3 User Menu

The application has some important features which should be available to the user whenever required. This includes changing user details, option for job employers, and logging out. So, these are given in the form of a drawer that comes in when the user swipes from left to right or click the menu icon button. This menu displays the username and email id with the account picture and some sections for easy navigation. The following are the different sections in the menu

- **Home:**
This is the default screen when the user opens the application. It is used in the menu because the user can directly jump from any other screen to the home screen which contains the job details. They can use the menu to navigate to the home page quickly.
- **Account:**
Sometimes the user needs to view or change their account details which are the main feature for the user. This is made easy by just using the account section on the menu so that it will be easy for users to access the account section from any page of the application.
- **Notifications:**
The application pushes some notification like job alerts and other new things. This may affect some user experience like they don't want push notifications from the application at a particular time. So, they can use this section to handle the notification timing and other settings like turning on or off the notification.
- **Log Out:**
After using the application, the user needs to safely log out from the application to prevent the usage by other people. So, this log out system is placed in the user menu section for easy logging out the process for the user of this application. After pressing this section, the application erases the current user details and restore to null that is it simply gets out from the main home screen and returns to the login screen. After this users again have to log in for entering a particular account. This process just restarts the application to starting state of the login page.

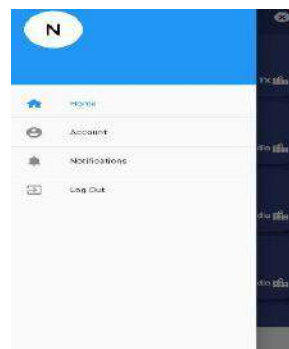


Fig.12: Image of User Menu



Fig.13: Image of Application Info

5.2.3.4 Application Information

The user of the application needs to get sufficient information about the developer and also be provided with a way to easily communicate with the developer. For example, if someone wants to get details about the developer or to give suggestions and feedback to the application or to report some issues and bugs regarding the application, they should get enough contact information about the developer. The user also needs an overview of the application and its features. For this, the app bar at the top of the home screen has the icon button which displays the necessary application information and contacts.

VI. CONCLUSION AND FUTURE WORKS

The job portal named 'Jobs 360' is successfully designed and implemented in flutter. It is a safe and secure job portal that contains many amicable features that help both job seekers and employers. Users can use the updated app at any time for their usage. The app 'Job 360' is a good option for job seekers to get a suitable job. As mentioned above there are many new features that make the user feel comfortable and the application makes the process of job employment an easy one and hence saving some considerable amount of time for its users. Although there

are many applications used for this purpose, they have certain limitations, disadvantages and they lack some advanced features.

This application solved many problems and overcame major disadvantages which in turn providing a better option for users. The advantages are like the filters for a different type of job and the application is a cross-platform one that enables the user to access the app from both Android and iOS. As the application has a simple UI design, it makes it a user-friendly mobile application. The complexity of the application is also less that it doesn't need any prerequisite knowledge to use this application. Finally, this application will be useful to job seekers and at the same time for job employers or offerors making a complex process a simple one which is available to every people and hence saving time.

There are some more functions and features that could be added with this are listed below:

- Making the user account more secure. Currently, the account is secure from some cyber-attacks like SQL injection. To make it more secure, some powerful encryption function can be implemented to make user account even safer by preventing many other illegal attacks.
- Posting of job and its details with the certification. This is because there will be some fake job details posted by some users which will make a bitter experience for the user. The application users may get cheated on some fake jobs posted in this application. To prevent this problem every job will be posted only after confirmation from the job offeror about job details and certification from the application such that this job is available for the given salary, location, time, etc.
- Extending job recommendations from different locations. This application just recommends jobs from a few locations and countries. By increasing the recommendation location, it can be useful to many other people who prefer some particular location. This increases user from all other parts of the country.
- Using Machine Learning (ML) concepts to predict a suitable job by getting skills from job seekers. This will make the recommendations more accurate and hence enhancing the user experience.

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The Role of Total Quality Management in Improving the Healthcare Services Performance: Empirical Study from Hospitals in Erbil City, KRI

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Abstract— The current study aims to measure the role of total quality management in enhancing healthcare services performance. The study was carried out at Jamhory hospital in Erbil, moreover, the researcher used a quantitative research method to test the developed research hypotheses. The researcher distributed 370 surveys at different private and public hospitals; however only 356 surveys were filled and received back from the participants, therefore the sample size for the current study is 356 participants, moreover, the response rate is $356/370 \times 100 = 96\%$ response rate. To measure the influence of total quality management in enhancing healthcare performance, the study determined 9 dimensions of total quality management including (Information and analysis, Strategic Planning, Product quality, Patient focus, R&D strategy, Empowerment, Process management, Training and education, Management commitment). The findings revealed that the highest value was between information and analysis as TMP practice with healthcare service performance, on the other hand, the lowest value was among the relationship between patient focus and healthcare service performance.

Keywords— Total Quality Management, Healthcare, Hospital, Service, Performance.

I. INTRODUCTION

In today's world, healthcare systems are of vital interest to hospitals at every level. This holds across all of our societies. In the long run, total quality management will come to be accorded an increasingly significant role and dependence in healthcare systems. As a result of this growing significance, which is also reflected in the growing proportion of national and international resources for both the private and public sectors that are being allocated to hospital management systems, TQM is being gradually implemented in hospitals and other types of healthcare organizations all around the world to cut costs, enhance efficiency, and increase the level of care that is provided to patients (Abbas, 2020). It is a common misconception that the TQM movements were the first to raise concerns about the quality of healthcare. At that time, the implementation of nutrition, sanitation, and infection control initiatives in

war hospitals contributed to a reduction in the death rate from 43 per cent to 10 per cent. These initiatives are the roots of quality assurance initiatives in healthcare (Gunasekaran et al. 2019). TQM has the potential to play a significant role in the competitive strategy employed by hospitals. Therefore, Total Quality Management (TQM), which focuses on increasing the level of customer satisfaction, presents the opportunity for increased market share as well as increased profitability.

TQM has the potential to play a significant role in the competitive strategies developed by hospitals to improve the quality of healthcare delivery systems.

Hospitals that operate in highly competitive markets are more likely to make an effort to separate themselves from their rivals based on providing higher-quality services (Alsyouf et al., 2021). Therefore, TQM is a strategy that

integrates internal quality measures with value analysis and compliance to specifications. This strategy plays a major emphasis on increasing the customer satisfaction index, which provides the opportunity for greater growth. Direct medical services like diagnoses, medications, surgery and treatment are examples of acceptable quality services. Acceptable quality services also include indirect operations like administration and purchasing, the expenses of which are represented in the price that the consumer pays. It may also include total quality of performance, which is directly related to healthcare safety and security, the attitude of nursing staff, and the role of doctors in terms of "time," which includes appointment time, delay time, service time, and timing concerning medical treatment and surgery (Shafiq et al., 2019).

As a consequence of this, throughout the past three decades, a great number of healthcare organizations have adopted the TQM philosophy to improve the overall quality of healthcare (Hamid et al., 2019). The application of sound TQM principles has the advantage of assisting medical facilities in determining first and foremost the needs of patients; secondly, in providing accurate healthcare services; thirdly, in establishing benchmarks for the most effective practices; and finally, in enhancing the operation of general medical procedures. Since Kurdistan's Ministry of Health (MoH) regards the enhancement of healthcare quality as an essential component of the overall procedure of nation-building, the country of Kurdistan, which is classified as a developing nation with a lower middle income, has now arrived at the TQM implementation stage in the provision of healthcare services. TQM is recognized as a worldwide strategic managerial principle in the literature. This has the advantage of resulting in improved overall firm performance, increased customer satisfaction, superior employee focus, and motivation, and decreased operational waste. In addition, TQM is recognized as a worldwide strategic management principle. As a result, total quality management is now recognized as a strategy for improving the efficiency and effectiveness of public healthcare delivery activities all over the world. Numerous medical facilities throughout the world are reverting to the adoption and implementation of efficient TQM concepts to reduce their overall operating expenses and enhance the overall quality of the healthcare services they provide to patients (Aladwan et al., 2021).

In the modern world, hospitals of every level are very interested in various healthcare delivery methods. This is the case in every one of our cultures. Total quality management will, with time, grow to be granted an increasingly substantial function and dependency within healthcare systems. It is a widespread misunderstanding that the TQM movements were the pioneers in bringing

attention to issues about the quality of medical treatment. These activities serve as the foundation for quality assurance efforts in the healthcare industry. TQM may end up being an important component of the strategic plan that hospitals use to compete (Ahmed et al., 2021). Therefore, Total Quality Management (TQM), which centres on improving the level of customer satisfaction, provides the chance for greater market share as well as higher profitability. This is because TQM is focused on increasing the level of customer satisfaction.

TQM has the potential to play a big part in the competitive strategies that hospitals undertake to enhance the quality of healthcare delivery systems. This potential exists because TQM is capable of playing such a role. It is more probable that hospitals that operate in highly competitive marketplaces would attempt to differentiate themselves from their competitors by delivering services of better quality to stand out in their respective markets. TQM is a strategy that blends internal quality measurements with value analysis and conformance to specifications (Alsawafi et al. 2021). As a result, TQM is also known as "quality management." This approach places a significant focus on elevating the customer satisfaction index, which creates the possibility for increased expansion. The provision of direct medical services such as diagnostics, prescriptions, surgical procedures, and treatments are all instances of services of acceptable quality. Services of an acceptable grade also comprise indirect activities such as administration and buying, the costs of which are reflected in the price that the user pays for the service (Sfreddo et al., 2021).

As a direct result of this, throughout the last three decades, a significant number of healthcare organizations have implemented the TQM concept to enhance the standard of healthcare as a whole. The implementation of trustworthy TQM principles has the advantage of assisting medical facilities in determining first and foremost the needs of patients, secondly, in providing accurate healthcare services, thirdly, in establishing benchmarks for the most effective practices, and finally, in improving the operation of general medical procedures. Because the Ministry of Health in Kurdistan (MoH) views the improvement of healthcare quality as an essential component of the overall process of nation-building, the country of Kurdistan, which is categorized as a developing nation with a lower middle income, has now arrived at the stage of TQM implementation in the provision of healthcare services. This is the case even though Kurdistan is a nation that is still in the process of building itself up.

In the literature, Total Quality Management (TQM) is referred to be a globally acknowledged strategic management philosophy (Sá et al., 2022). This has the

benefit of resulting in enhanced overall firm performance, higher customer satisfaction, superior staff attention and motivation, and lower operational waste. It also has the potential to boost employee concentration and motivation. In addition, TQM is widely acknowledged as a concept of strategic management all over the globe. As a direct consequence of this, comprehensive quality management is now widely acknowledged as a method for enhancing the efficacy and efficiency of operations related to the delivery of public healthcare in every region of the globe. A growing number of healthcare institutions all around the globe are resorting to the adoption and implementation of effective TQM ideas to lower their overall operating expenditures and improve the overall quality of the healthcare services they provide to their patients (Abu-Rumman et al., 2021).

II. LITERATURE REVIEW

Total Quality Management

The application of TQM has been the subject of a significant amount of research all across the world. Following an analysis of the existing relevant TQM literature, it was discovered that many researchers adopted various TQM definitions and frameworks based on their comprehension of TQM as well as the aims of the research that they were conducting. As a direct result of this, there is less agreement on what TQM is and what aspects make it up (Tortorella et al. 2021). As Moore and Brown point out, TQM can be understood in a variety of ways, but it is interesting to note that no single interpretation can adequately convey the full picture. TQM is said to be the embodiment of many concepts and ideas that are relevant to the quality area in a variety of circumstances.

According to Mullins' definition, TQM is a way of life for an organization that is devoted to the complete and ongoing satisfaction of its customers through the contribution and involvement of its people. A quality-centred, customer-focused, fact-based, team-driven, senior management-led approach to fulfilling an organization's strategic imperative through continuous process improvement is how Godfrey describes it as well. The term "total quality management" (TQM) was coined by Ramori et al. (2021), who described it as "a collection of strategies and processes used to decrease or eliminate variance from a production process or service delivery system to increase efficiency, reliability, and quality." Another definition of TQM that may be found in the Certified Manager of Quality/Organizational Excellence Handbook is that it is a management technique to achieve long-term success through the satisfaction of customers. The Chartered Quality Institute also defines TQM as a philosophy for managing an organization in a way that enables it to meet the needs and expectations of

stakeholders efficiently and effectively without compromising ethical values. This definition can be found in the TQM section of the CQI website. According to the definition provided by the Department of Defense of the United States, TQM is "a strategy for constantly improving performance at every level and in all areas of responsibility." From the several definitions shown above, it is clear that the concept of Total Quality Management (TQM) focuses on the ongoing improvement of quality concerns through the involvement of all parties involved, ultimately leading to satisfied customers and improved overall company performance (Fonseca et al., 2021).

The Importance of TQM in Healthcare Systems

The quality of health services encompasses a diverse range of dimensions, each of which is critical to consider. In the context of medical care, the providers of these services—doctors, hospitals, nursing homes, clinics, and the like are considered the sellers because they offer these services for sale at predetermined costs (Marimon et al., 2021). The customer or patient who purchases these health services at the prices that have been determined is known as the buyer. It may also include the quality of performance that is directly associated and closely tied to healthcare, such as the food, housing, safety, and security of the workplace, as well as the attitude of the employee and other aspects that arise in connection with hospitals and nursing homes. Therefore, the time it takes to make an appointment, the time it takes for services, and the timing concerning medical treatment and surgery are all factors to consider (Mosadeghrad, 2021).

- The quality of the organization's leadership and management
- The calibre of its medical staff
- The standard of medical care provided in hospitals

Information and Analysis

The quality of the non-clinical aspects of care, primarily amenities and access to care, over which administrative leaders have the most control, is the primary focus of administrative leaders who are responsible for the operations of hospitals, clinics, and other healthcare delivery organizations (Mitropoulos, 2021). This is the primary concern of administrative leaders. It is, therefore, possible for the perspective of administrators on quality to differ from that of physicians and patients about issues of efficiency, cost-effectiveness, and equity. Efficiency and cost-effectiveness are of primary concern when it comes to the equitable distribution of resources. This is because administrators are responsible for ensuring that resources are spent where they will be able to have the greatest positive impact (Raut et al. 2021).

R&D Strategy

In general, increasing investments in research and development within the healthcare sector contribute to improvements within sectors associated with health services. The strengthening of healthcare providers and organizations, as well as the healthcare system as a whole, technology, not only increases the quality of health care but also drives related industry growth and innovation (Javaid et al., 2021). Not only does business contribute to an overall improvement in the health of the general population, but it also drives national industries. To bring the healthcare industry back to life, it's not enough to just improve the quality of care growth in both economic competitiveness and output. The demand for skilled labour will contribute to the maintenance of a robust economy (Alsyouf et al., 2021). It will not only improve the overall health of the population, but it will also contribute to increased national competitiveness. Students are encouraged to pursue tertiary education to get higher degrees in this highly competitive atmosphere. The economy is rapidly expanding. The demand for competent labour will give rise to a competitive atmosphere that is both healthy and productive, and improve their level of education as well as their competence in a variety of technological fields (Iqbal et al., 2021). This will eventually result in a learner who wishes to further their education enrolling in post-secondary programs to get higher degrees, acquire more training, and a new generation of researchers and a technologically proficient workforce will build the foundation for a piece of new knowledge and experience in a variety of technological fields. This will usher in a fresh crop of academics and researchers, as well as a sustainable future built on research and development that will drive innovation. Improved conditions will also be enjoyed by the general populace.

A workforce with a high level of technical expertise will be established, which will lay the foundation for a sustainable future based on R&D-led innovation (Chen et al., 2021). As a result of the development and implementation of cutting-edge medical technologies, people have an enhanced quality of life. In the course of this procedure, there is innovation. As a result of the technological advancements, regular people will also see an improvement in their quality of life. This will increase both the quality and quantity of not only the people working in research but also the advancements in medical technology that have been made available. Both qualitative and quantitative analysis will be performed during this procedure. Individuals who are capable of dealing with and making the most of advanced technologies; individuals who are capable of making the most people who work in research, but also the people who can interact with and contribute to the study being done (Rojas-Lema et al., 2021). Those who are in the business of

producing health-related goods and who make the most of modern technologies to their advantage (Ammar et al., 2021).

Patient Focus

The consumer is the ultimate arbiter of product quality. From the point of view of total quality management (TQM), every strategic choice that a healthcare institution makes is "consumer-driven." Companies focused on the customer measure the aspects that contribute to the consumer's pleasure. Many aspects of a customer's whole purchase, ownership, and experience, including the services they receive, contribute to the customer's sense of value and happiness. Also contributing considerably to the company's idea of quality is the reduction of errors and defects, as well as the elimination of the factors that lead to customer discontent (Rahman & Al-Borie, 2021). In addition, tools such as customer opinion surveys and focus groups can help understand the requirements and values of customers. Customer attention extends beyond the customer to include internal relationships; however, society is an important customer for businesses. It is important to do things related to business ethics, the health and safety of patients, the environment, and the sharing of quality standards across healthcare systems and communities (Hanaysha & Alzoubi, 2022).

Strategic Planning

The process of strategic planning needs to be able to foresee some changes, including the expectations of customers; newly emerging opportunities; the development of advanced diagnostic technologies; an evolving patient care system; and societal expectations. A strong focus on the future and a commitment to building long-term relationships with important consumers, employees, doctors, nurses, suppliers, and members of the public and private communities are required to achieve leadership positions in quality healthcare service and healthcare delivery (Qayyum et al., 2021). The senior leaders serve as role models by encouraging leadership throughout the organization and reaffirming the organization's core values through their roles in planning, reviewing the healthcare quality performance, and making sure that staff members are working toward quality achievement (Shou et al., 2021).

Training and Education

The administration of every system and process should include ongoing efforts toward improvement. To attain the best possible level of performance, one must have a strategy that is clearly outlined and expertly implemented for ongoing learning and progress. Learning is the process of adapting to new circumstances, which can result in new objectives or methods. Improvements and continued education should be ingrained in the way that an

organization does business. If you want to keep getting better, you need to plan, carry out, and come up with new ideas regularly (Singh et al., 2021).

Empowerment

The expertise, abilities, and drive of an organization's workforce are becoming an increasingly important factor in determining the success of a healthcare institution. In the management of healthcare facilities, both individuals and departments are responsible for their work. Participating people in TQ work together in self-directed work teams, steering committees, and quality circles, among other types of team structures. The department wants to improve the efficiency of the system by getting people from different departments and roles to work together (Kaur et al., 2021).

Process management

Deming and Juran observed that the vast majority of quality issues are related to procedures, whereas only a small number are the result of individual employees' actions. It entails planning and administration of the actions necessary to attain a high level of performance in a process, as well as the identification of opportunities for enhancing the quality and increasing customer satisfaction (Camilleri, 2021).

Product/ Services Quality

The measures that are essential to provide appropriate confidence that a patient's services or safety will satisfy a particular need for quality are referred to as quality assurance and can be planned out or carried out systematically. This department is responsible for activities such as quality planning and control, continuous improvement, internal auditing, and reliability testing. In addition to that, it encompasses quality guidance and expertise, the training of staff members in quality, the study of customer diagnoses, treatment records, medical claim information, and patient liability cases (Mousa & Othman, 2020). Management is accountable for defining, documenting, and providing support for the quality policy and quality manual, as well as performance, reliability, and safety. A quality manual is required to be documented as part of a quality manual system, which is defined as an assembly of components to implement quality management. These components include the organization's structure, responsibilities, procedures, and resources (Mannion & Davies, 2018).

Management Commitment

People in management positions don't appear to care about the formation of relationships between the management level and the members of the organization. These relationships are the means through which a manager may exert some positive effect on the conduct of the company's members (Ramli, 2018). The characteristics of the

leadership style in the organization are reflected in the characteristics of the strategic process, which includes the formulation, implementation, and monitoring of strategies in the business. For a company to be able to adapt to changing conditions and prevail in the face of new problems, managers need to take the initiative to make the necessary organizational adjustments and put those changes into effect (Bastas & Liyanage, 2019). On the other hand, businesses and their employees fight against these kinds of changes in a variety of ways.

The majority of managers have a habit of taking into consideration several factors, such as the company profile, the orientation of top management, the goals and objectives, the internal and external variables, and other factors that appear to be key in determining whether or not strategies will be successful in the organization. However, issues about human factors are not taken into consideration. This includes learning how to manage people and building relationships between managers and people at lower levels of the organization. This is done to persuade and motivate people in the organization, whose help is needed to develop the strategy successfully (Bastas & Liyanage, 2019).

Healthcare Services Performance

Researchers of the highest calibre in the field of quality assurance, such as Deming, Juran, and Crosby, support the idea that complete quality implementation is positively correlated with organizational performance. When quality is improved, productivity goes up significantly, whereas a decline in quality results in a loss of a company's edge in the market. In addition, if the primary focus of the company is on producing high-quality goods, then the company's profits can be increased by an amount that is equal to five to ten per cent of its annual revenue. According to the findings of the researchers, there are a large number of firms that have been successful after implementing quality improvement efforts (Abdelaziz et al., 2018).

Through a reduction in errors, a decrease in the cost of maintaining high quality, the elimination of customer complaints, and a reduction in overheads and costs associated with material handling, businesses have been able to save a significant amount of money. Both the subjective and objective aspects of an organization's performance can be taken into consideration when evaluating its overall effectiveness. When measuring the success of a company, researchers have the option of referring to either subjective or objective performance measurements. The paper presents advice for decision-makers concerning instruments for measuring the performance of businesses in terms of both financial and operational metrics. A select group of quality management criteria is responsible for determining the dimensions of

performance measurement. The principles of TQM have been shown to have a favourable correlation with the performance of organizations. If an organization's Total Quality Management is done right, it means that the organization's overall performance will get better (Kazancoglu et al., 2018).

Conceptual Research Model

As shown in Fig. 1, the conceptual research model included ten constructs, in this research the TQM practices within healthcare considered nine constructs, namely information and analysis, strategic planning, product quality, patient focus, R&D strategy, empowerment, process management, training and education, management commitment, and healthcare services performance.

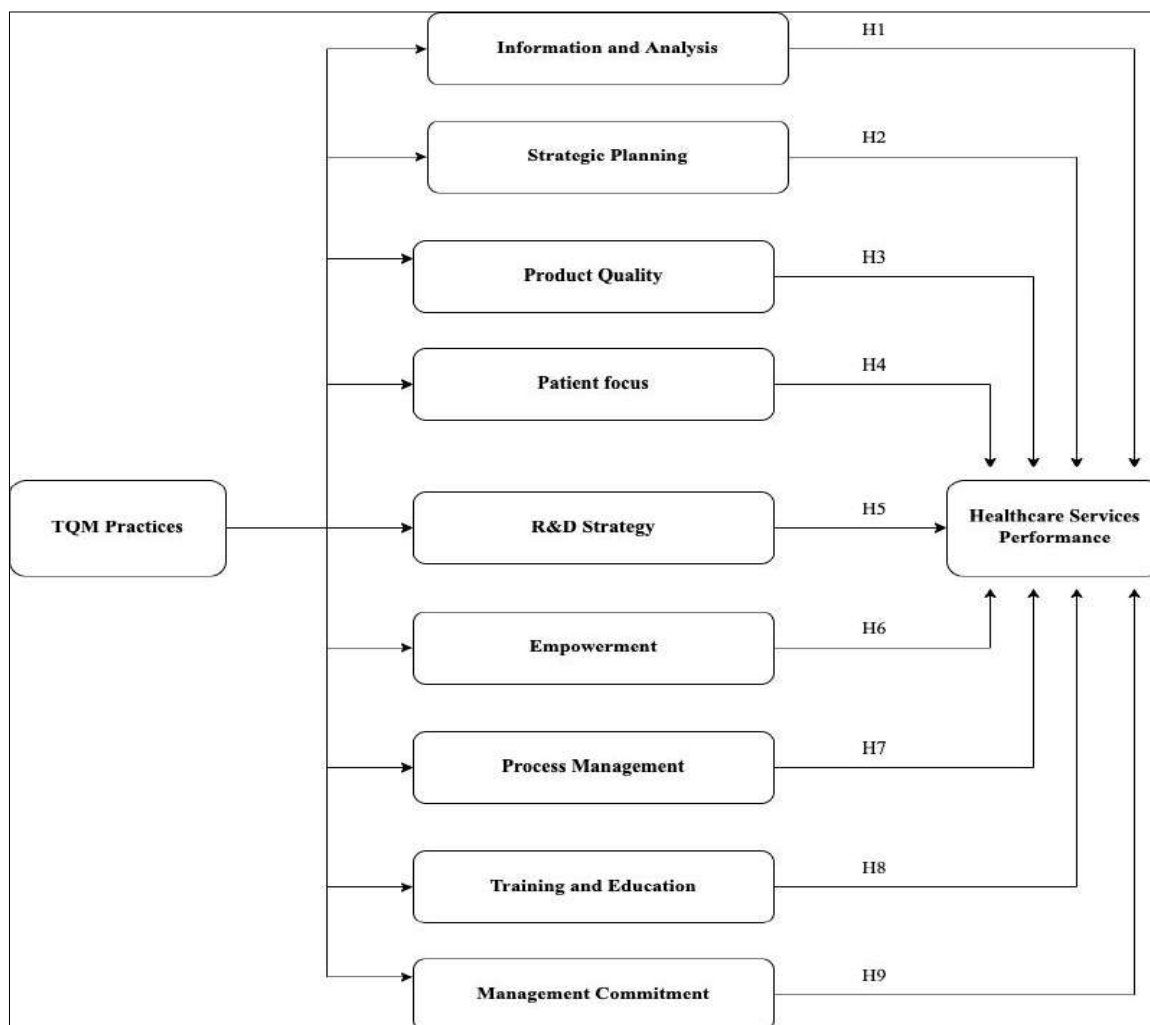


Fig.1: Research Model

Research Hypotheses

H1: Information and analysis as TQM practice will have a significant and positive influence on performance improvement in healthcare services.

H2: Strategic Planning as a TQM practice will have a significant and positive influence on performance improvement in healthcare services.

H3: Product quality as TQM practice will have a significant and positive influence on performance improvement in healthcare services.

H4: Patient focus as TQM practice will have a significant and positive influence on performance improvement in healthcare services.

H5: R&D strategy as TQM practice will have a significant and positive influence on performance improvement in healthcare services.

H6: Empowerment as TQM practice will have a significant and positive influence on performance improvement in healthcare services.

H7: Process management as TQM practice will have a significant and positive influence on performance improvement in healthcare services.

H8: Training and education as TQM practice will have a significant and positive influence on performance improvement in healthcare services.

H9: Management commitment as TQM practice will have a significant and positive influence on performance improvement in healthcare services.

III. RESEARCH METHODOLOGY

The researcher used a quantitative research method to test the developed research hypotheses. According to the Kurdistan Region Statistics Office (Ministry of Planning/Kurdistan Regional Government), there are more than 133 private and public hospitals in the Kurdistan region, including more than 50 private and public hospitals in Erbil, more than 58 private and public hospitals in Sulaimaniah, more than 22 private and public hospitals in Duhok, and 3 private and public hospitals in Halabja as shown in below table:

Table 1: Number of Hospitals (Public and Private)

Locations	Number of Hospitals
Kurdistan Region	133
Erbil City	50
Sulaimaniah	58
Duhok	22
Halabja	3

Furthermore, according to Kurdistan Region Statistics Office, each hospital has approximately 200 employees in general, this number varies based on the size of the hospital. Therefore, the population for the current study is 200 employees * 50 hospitals = 10,000 employees. Moreover, based on sample size calculation, the sample size for the current study is 370 employees with a confidence level of 95% that the real value is within $\pm 5\%$ of the measured/surveyed value. The researcher distributed 370 surveys at different private and public hospitals; however only 356 surveys were filled and received back from the participants, therefore the sample size for the current study is 356 participants, moreover, the response rate is $356/370 \times 100 = 96\%$ response rate. To measure the influence of total quality management in enhancing healthcare performance, the study determined 9 dimensions of total quality management including (Information and analysis, Strategic Planning, Product quality, Patient focus, R&D strategy, Empowerment,

Process management, Training and education, Management commitment).

IV. RESULTS

Reliability Analysis

The researcher implemented reliability analysis to the values of Cronbach's Alpha for information and analysis as an independent factor, found to be $.829 > .6$ this indicates that the items used to measure the information and analysis factor were reliable, and the values of Cronbach's Alpha for strategic planning as an independent factor, found to be $.770 > .6$ this indicates that the items used to measure strategic planning factor were reliable for the current study, the values of Cronbach's Alpha for product quality as an independent factor, found to be $.741 > .6$ this indicates that the items used to measure product quality factor were reliable for the current study.

Table 2: Reliability Analysis

Constructs	Item N.	Cronbach's Alpha
Information and analysis	7	.829
Strategic planning	7	.770
Product quality	7	.741
Patient focus	7	.726
R&D strategy	7	.727
Empowerment	7	.751
Process management	7	.855
Training and education	7	.835
Management commitment	7	.780
Healthcare performance	10	.773

The values of Cronbach's Alpha for equal opportunity as an independent factor were found to be $.726 > .6$ this indicates that the items used to measure the equal opportunity factor were reliable for the current study, and the values of Cronbach's Alpha for R&D strategy as an independent factor, found to be $.727 > .6$ this indicates that the items used to measure R&D strategy factor were reliable for the current study. The values of Cronbach's Alpha for Empowerment as an independent factor were found to be $.751 > .6$ this indicates that the items used to measure the empowerment factor were reliable.

The values of Cronbach's Alpha for Process management as an independent factor were shown to be $.855 > .6$ this

indicates that the items used to measure the process management factor was reliable. The values of Cronbach's Alpha for Training and education as an independent factor were found to be $.835 > .6$ this indicates that the items used to measure the Training and education factor was reliable. The values of Cronbach's Alpha for Management commitment as an independent factor were found to be $.780 > .6$ this indicates that the items used to measure the Management commitment factor were reliable for the current study, and the values of Cronbach's Alpha for Healthcare performance as a dependent factor, found to be $.773 > .6$ this indicates that the items used to measure Healthcare performance factor were reliable for the current study. However, the results revealed that all items used to measure the relationship between nine independent factors and dependent factors were reliable for the current research.

Correlation Analysis

The researcher attempted to find the correlation between nine independent variables and a dependent variable,

therefore the correlation analysis was implemented. It was found that the value of Pearson correlation for information and analysis = $.521^{**} > .01$ therefore there is a positive and significant correlation between information and analysis and Healthcare performance, in terms of the strength it was found to be a moderate correlation. The value of Pearson correlation for strategic planning = $.630^{**} > .01$, therefore, there is a positive and significant correlation between strategic planning and Healthcare performance, in terms of the strength it was found to be a strong correlation, the value of Pearson correlation for product quality = $.414^{**} > .01$, therefore, there is a positive and significant correlation between product quality and healthcare performance, in terms of the strength it was found to be a weak correlation, the value of Pearson correlation for patient focus = $.354^{**} > .01$, consequently, there is a positive and significant correlation between patient focus and Healthcare performance, in terms of the strength it was found to be a weak correlation.

Table 3: Correlation Analysis

	Pearson Correlation	I&A	SP	PQ	PF	E	PM	T&E	MC	HSP
		1								
	Sig. (2-tailed)									
I&A	Pearson Correlation	.399**	1							
	Sig. (2-tailed)	.000								
SP	Pearson Correlation	.576**	.470**	1						
	Sig. (2-tailed)	.000	.000							
PQ	Pearson Correlation	.347**	.389**	.365**	1					
	Sig. (2-tailed)	.000	.000	.000						
PF	Pearson Correlation	.632**	.696**	.615**	.611**	1				
	Sig. (2-tailed)	.000	.000	.000	.000					
E	Pearson Correlation	.434**	.556**	.419**	.793**	.673**	1			
	Sig. (2-tailed)	.000	.000	.000	.000	.000				
PM	Pearson Correlation	.561**	.753**	.547**	.634**	.772**	.730**	1		
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000			
T&E	Pearson Correlation	.757**	.672**	.548**	.179**	.492**	.299**	.565**	1	
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	
MC	Pearson Correlation	.778**	.455**	.571**	.244**	.504**	.308**	.437**	.644**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000
HSP	Pearson Correlation	.521**	.630**	.414**	.354**	.662**	.443**	.601**	.533**	.522
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000

**, Correlation is significant at the 0.01 level (2-tailed).

N= 356

The value of Pearson correlation for R&D strategy = $.662^{**} > .01$, therefore, there is a positive and significant correlation between R&D strategy and Healthcare performance, in terms of strength it was found to be a strong correlation. The value of Pearson correlation for empowerment = $.443^{**} > .01$ therefore there is a positive and significant correlation between empowerment and Healthcare performance, in terms of the strength it was found to be a weak correlation, the value of Pearson correlation for process management = $.601^{**} > .01$, thus, there is a positive and significant correlation between process management and healthcare performance, in terms

of the strength it was found to be a strong correlation, the value of Pearson correlation for training and education = $.533^{**} > .01$, thus, there is a positive and significant correlation between training and education and healthcare performance, in terms of the strength it was found to be a moderate correlation.

The value of Pearson correlation for management commitment = $.522^{**} > .01$, hence, there is a positive and significant correlation between management commitment and Healthcare performance, in terms of strength it was found to be a moderate correlation.

Table 4: Model Summary

Model	Model Summary			
	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.736a	.542	.538	.33447
a. Predictors: (Constant), Information and analysis, Strategic Planning, Product quality, Patient focus, R&D strategy, Empowerment, Process management, Training and education, Management commitment				

It was found that the value of R square = .542 this indicates that 54% of the variables have been explained.

Table 5: ANOVA

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	129.814	9	14.424	128.933	.000b
	Residual	109.745	981	.112		
	Total	239.559	990			
a. Dependent Variable: Healthcare Performance						
b. Predictors: (Constant), Information and analysis, Strategic Planning, Product quality, Patient focus, R&D strategy, Empowerment, Process management, Training and education, Management commitment						

It was found the value $F = 128.933$ and since the value is greater than .001, this indicates there is a positive association between variables used to test research hypotheses.

The researcher utilized multiple regression analysis to find the most effective and suitable factors for increasing the level of healthcare performance in Kurdistan. It was found

that the value of B for information and analysis = $.448 > .001$ and P-value = .000, this indicated that there is a positive relationship between information and analysis and Healthcare performance, accordingly, the first research hypothesis was supported, and the value of B for strategic planning = $.584 > .001$ and p-value = .000, this indicated that there is a positive relationship between strategic planning and Healthcare performance.

Table 6: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.687	.104		6.617	.000
	Information & Analysis	.448	.023	.521	19.213	.000
	Strategic Planning	.584	.023	.630	25.509	.000

	Product Quality	.414	.029	.414	14.336	.000
	Patient Focus	.269	.023	.354	11.925	.000
	R&D Strategy	.671	.024	.662	27.796	.000
	Empowerment	.389	.025	.443	15.566	.000
	Process Management	.571	.024	.601	23.659	.000
	Training & Education	.446	.022	.533	19.831	.000
	Planning					
	Management Commitment	.497	.026	.522	19.274	.000
a. Dependent Variable: Healthcare Performance						

The second research hypothesis was supported, the value of B for product quality = .414 >.001 and P-value = .000, this indicated that there is positive relationship between product quality and Healthcare performance, accordingly the third research hypothesis was supported, the value of B for patient focus = .269 >.001 and p-value = .000, this indicated that there is positive relationship between patient focus and healthcare performance, accordingly the fourth research hypothesis was supported, the value of B for R&D strategy = .671 >.001 and p-value = .000, this indicated that there is positive relationship between R&D strategy and healthcare performance, accordingly the fifth research hypothesis was supported, the value of B for empowerment = .389 >.001 and p-value = .000, this indicated that there is positive relationship between empowerment and Healthcare performance, accordingly the sixth research hypothesis was supported, the value of B for process management = .571 >.001 and P-value = .000, this indicated that there is positive relationship between process management and healthcare performance.

Based on the results the seventh research hypothesis was supported, the value of B for training and education = .446 >.001 this indicated that there is a positive relationship between training and education and healthcare performance, accordingly the eighth research hypothesis was supported, and the value of B for management commitment = .497 >.001 and p-value = .000, this indicated that there is a positive relationship between management commitment and healthcare performance, accordingly the ninth research hypothesis was supported.

V. Conclusion

In conclusion, the study presented here has provided conclusive evidence to support the hypothesis that quality practices exert a considerable impact on the organizational effectiveness of hospitals. This research contributes to the private healthcare sector in Kurdistan by providing empirical studies that can act as a reference for future

studies. The findings revealed that the highest value was between information and analysis as TMP practice with healthcare service performance, on the other hand, the lowest value was between the relationship between patient focus and healthcare service performance. Even though there has been a limitation in the form of a lower participation rate from public hospitals in this survey, this research is still important. In addition, the shift away from poor quality practices and toward good quality practices, as well as the increase in organization performance, contributes significantly not only to the academic literature related to health-care quality but also to the methodological part, particularly in terms of making use of structural equation modelling analysis (Li et al., 2020). Therefore, it is recommended that further study broaden the scope of the investigation in terms of geography and include a greater number of hospitals, particularly public-sector ones. There is a considerable and favourable association between quality management techniques and the performance of an organization. Because the hospitals were hesitant to disclose the actual financials with us, we asked the hospital owners what they thought their objective and subjective performance was over the past three years. It's possible that the absolute performance measurements of public hospitals are available, which would boost the overall quality of the findings (Rehman et al., 2022).

The literature and the perspectives of several different authors have been discussed, and our point of contention is that the most important success variables affecting TQM are leadership, communication, and employee involvement. Strong executives who are interested in implementing TQM can steer their organizations through challenging periods and contribute to the overall improvement of their organizations' performance. In addition, communication between the highest levels of management and the lowest levels of employees is an essential component of the TQM implementation process. In addition, employee involvement is another important aspect of TQM's success (Khan et al. 2020). Employees are the foundation of a business, and

implementation can only take place at the ground level. In the future, researchers can try to determine whether or not there is a connection between TQM and performance in a variety of regions and then compare the results to one another.

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Forensic Accounting and Integrated Financial Reporting of Banks using Hausman

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Abstract— This study examined forensic accounting and integrated financial reporting of listed banks in Ghana. The study aimed to examine forensic accounting effects on the integrated financial reporting of the listed banks. Its specific objectives determined the impact Litigations, Claims, Fraud cases reported, Cost of forensic investigation and Non-performing loans (LCFCN) have on integrated financial reporting variables such as corporate social responsibility – CSR. Integrated financial reporting (IFR) is the dependent variable while forensic accounting (FA) is the independent variable. In line with these stated objectives, five research questions and five hypotheses were formulated and it adopted the ex-post facto research design. The population of study constitutes 24 listed banks in Ghana, only 8 listed banks was selected through a purposive sampling. The data for the study was purely secondary and sourced from related books of the banks via Central Banks bulletin (Ghana), African financials and banks reports for a period of 16years from 2004-2020. Moreover, data were analyzed using the descriptive statistics, the Shapiro -Wilk test for a diagnostic check for normality and a combination of the panel regression analysis with the Hausman test which aided appropriately specification whether the analysis should be done with a fixed effect or random effect model of which the fixed effect was used for the interpretation at ($P 0.050 < 0.10$). In nations analyzed, the results among others demonstrated that forensic accounting and integrated financial reporting were statistically significant at 1%, 5%, and 10% as claims is positive and have significant effect on CSR ($\beta = 64687.53$, $P < 0.10$); Non-performing loans is statistically significant and had a negative effect on CSR ($\beta = -2.934$, $P = 0.054 @ 0.10$). The study hence concludes that the effective implementation of forensic accounting had a constructive and significant effect on the integrated financial reporting of listed banks in Ghana. The study recommends among others that the apex banks should mandate banks to incorporate forensic accounting when reassessing their employability skill set, report production, debt administration and management, and portray fairness virtue in their reporting system so as to attract more investment and positive public image.

Keywords— Hausman test, fixed effect, random effect, Shapiro-Wilk, forensic accounting, integrated financial reporting.

I. INTRODUCTION

Financial industry globally with prospect, aim at retaining the stakeholder's interest through the establishment of excellent corporate governance. The importance which remains paramount given the industry's role in mobilizing funds, the disbursement, awarding of credit facilities to the demanding sector, the paying and settlement system, as well as executing monetary policies (Nkama and John, 2016). This industry is an important part of any country's economy (CBN, 2003). As a result, enacting laws, regulations, and codes of conduct that will ensure excellent corporate governance through improved board performance in any country's financial institution is critical. A forensic accountant by profession carries out his duty of professionalism in fraudulent financial investigations and possess excellent expertise skills in scientific knowledge and law background which may be enable him/her to assist management in improving corporate governance practices in the industry thus assuring effective fraud prevention and suitable responsibility. As a result, the existence of a forensic accountant allows the management of any firm to carry out their original tasks meticulously and effectively, knowing that a professional is on hand to investigate and detect any wrongdoing in the event of any skepticism.

According to Zia (2010), investigative accounting is the professional application of accounting, finance, tax, auditing expertise and instruments to evaluate, research, enquire, test, and analyze issues in individual disputes (intra and inter), crimes and adjudication in order to uncover truthfulness of financial data from a professional stand. This concept emphasizes that the job of a forensic accountant in a company is crucial due to their extensive knowledge of the internal control system and the legislation (the material, statutory, customary, the confirmation and methodological laws), Other institutional prerequisites, investigative capability, and interpersonal abilities assist with questions regarding presumptions or suspicion of fraud, which may include cases, master assurances, and inquiry by a fitting authority, and a full investigation of presumed misrepresentation, falsification, abnormality or indecency, which may expedite disciplinary measures.

IIRC (2013), explained that IR encompasses integrated thinking that which the basis for integrated decision. Hence, these decisions are whole and guarantee that value is created within the stipulated period. Apparently, the steady need for set rules in guiding corporate reporting, the IIRC being a global actor as well as NGOs was set up to provide the framework. Integrated corporate reporting as formed in 2010 (IIRC, 2013) and its framework in hinged to providing detail reports concerning external environment that is

capable of influencing firms' actions, the resources used as well their association as a whole (Lipunga, 2015).

The IR framework clamps on the set rules features such strategic focus and posterity, stakeholder mutuality, information link, materiality status, concise, reliable, complete, consistency and comparability (IIRC, 2015). These 7 set rules facilitate an integrated report discloses strategies. These set rules and elements ensure that the reporting links between financial and non-financial information forms the base for evaluating current operations and the future state of affairs.

Furthermore, Krzus (2011) explained that for stakeholders to benefit and have better understanding of the performance of the firm various activities there is need for monitoring and review, allows better decisions making process, allows deeper engagement with information and lowers the business reputational risk. Also, Eccles and Saltzman (2011) enumerated the benefits of IR as internal, external market and regulatory risk management. The internal benefit includes improve resource allocation as well as reduction in exposures, the external benefits relates to owners and public satisfaction while the risk management benefit reveals the opportunity it provides for the firm to participate setting standards of operation.

The financial reporting framework, according to Olakunori (2009), is a core accounting premise, rules and methodologies utilized on financial statements provided for a wide range of organizations. These organizations include publicly listed and privately owned enterprises, quasi organizations, and government. It has been obtained as he asserted that the main aim of financial disclosure is the need for acceptability and consistency in their framework. Numerous business corporations or entities that run with the goal of having a widely renowned network need financial statements; this is included in the yearly report for decision-making purpose. The books of original entry are helpful in detecting personal accounting transactions in financial reporting, and they, like the primary sources, are frequently scrutinized by qualified experts for valuation of the concern financial data and to make sure all economic activities are satisfactorily documented (Omolehinwa, 2000).

With the multiple corporate scandals of Enron, Parmalat, Ireland's Elan, Dutch Firm, Tyco International, Belgium's Learnout, Hauspie and WorldCom in the 1990s, the issue of corporate governance and ethical behavior became a core concern debate during the global liquidity crunch with relation to financial firms. OECD report published in 2004, these scandals together with the corporate sector's ostensibly poor performance in Africa, have edged the activation of forensic accounting.

Despite this, the number of cases of financial frauds ranging from management, bankruptcy, tax, securities and money laundering schemes has been on the increase. This fraudulent playout impedes crucial sustainable development in many nations and jeopardizes strong corporate governance and suitable business practices (Suleiman et al., 2018). In the African banking system, fraud typically occurs once because the victim is aware of the theft and prevents potential risk ahead; the victim of a cheat on the other hand, is typically uninformed of the misfortune, and thus the fraudster can repeatedly execute the misconducts. In that respect, falsification is just the same as repeating theft on a comparable tragedy by the same perpetrator. In the case of corporate extortion, there is just one victim, the association, and there are usually isolated instances of fraud that affect the industry. According to Ajagun and Agede (2017), these criminal acts are known to be carried out by highly skilled syndicates using advanced methodologies, necessitating the use of equally skilled and versatile accountants to unleash the fraudulent charts.

According to Bill Gates (2001), the companies that employ digital tools to re-invent the way they function will be the most successful in the coming decades. These businesses will make quick decisions, respond quickly, and have a direct beneficial impact on their customers. Technological migration will place institutions on a shock wave of change which will destroy conventional company practices. Many African financial institutions are dominated by tiny asset-based institutions that cannot compete effectively with their multinational counterparts. In keeping with what Bill Gates stated, the introduction of information technology has compelled a rapid transformation of African systems, resulting in a high level of competition among these institutions. The need to improve banking technology and institutional arrangements for transmission mechanisms and other operational areas of financial institutions is very important in assuring operational efficiency as an interesting necessity.

The primary aim of this research is to ascertain the effect of forensic accounting on integrated financial reporting with aggregated specific objectives of investigating the effect these variables of Litigation, claims, Fraud cases reported, Cost of Forensic investigation and non-performing loans (*LCFCN*) has on corporate social responsibility (CSR).

1.1 Research Questions

Does Litigation, claims, Fraud cases reported, Cost of Forensic investigation and non-performing loans (*LCFCN*) have impact on corporate social responsibility (CSR)?

1.2 Research Hypotheses

H₀: *LCFCN* have no significant effect on the Co-operate Social Responsibility (CSR) of the Ghana banks

This research work will be of immense relevance to analysts, regulators, government, professional, students and international cum host communities in a bid to make prompt decision while considering various facets. The scope covers the financial institution in Ghana with specific selection to spread visibility within the 15-year period from 2005 – 2020.

II. LITERATURE REVIEW

The term "forensic" immediately conjures up images of popular television shows such as CSI, NCIS, and Law and Order, in which a crime is committed and detectives and investigators use various forensic techniques (fingerprints, DNA analysis, blood splatter analysis, tool mark identification, hair and fiber comparisons, etc.) to solve the crime in minutes. In contrast, the phrase accounting immediately conjures up images of debits and credits, financial statements, tax returns, and auditing.

"Forensic" as a Latin word "forum," which means "of, relating to, or associated with" the legal system or the court system. The widest definition of forensic science describes it as the application of scientific knowledge to legal problems. The field of forensic accounting combines a unique mix of scientific and quantitative accounting and auditing skills with investigative and legal procedures, judicial procedures, and digital forensics. Analysis of risk, quantitative techniques, and research are all included in the job description. Accountants who have obtained specific training to work as financial investigators and fraud specialists are forensic accountants.

According to Modugu and Anyaduba (2013), forensic science is related to crime solving. It is the application of science to resolve questions arising from criminal or civil litigation, and it has been introduced into the accounting domain in order to serve as a more reliable and evidential means of enhancing financial investigations and preventing or reducing financial impropriety in all of its manifestations. Forensic accounting is concerned with deterring, detecting, and investigating financial reporting fraud on a broad scale (Kristic, 2009).

In simpler words, the integration of accounting, auditing and investigative abilities creates the specialty known as Forensic Accounting. Accounting in a judicial setting financial inquiry, investigative accounting, and fraud examination are all terms that are used interchangeably.

2.1.1 Historical Base of Forensic Accounting

Forensic accounting also called investigative accounting or financial inquiry can be considered in Nigeria as a new discipline in accounting, having emerged in response to a clarion call to ensure the credibility of financial accounts in

the country. Forensic accounting as credited to Kutilya, who was the first ever economist to openly discuss the importance of Forensic inquiry since, via the preaching of checks and balances, audit etc. In his classic disquisition 'Arthashastra' (Science of Material Wealth) as means of curbing the famous forty ways of embezzlement, also propounded by him. Closely, Emperor Akbar's trusted Scholar Birbal too had ingeniously tricked up his slaves to investigate into financial crimes that closely mirrors today's subject according to Joshi (2003). Peloubet (1946), according to Kasum (2009), was the first to coin the term "forensic accounting," but Crumbley and Apostolou (2007) assert that the term can be traced back to 18th century court decision in which a Scottish professional issued a memo canvassing his expert capabilities in arbitration support in 1824", while Peloubet was the first to coin the phrase and publish the phrase "forensic accounting," according to Kasum (2009). Tommie and colleagues (2006), on the other hand observed that it is one of the oldest professions with roots dating back to the Egyptians. The king's "eyes and ears" was a individual who essentially functioned as expert for Pharaoh, keeping an eye on inventories of tangible and intangible assets on his behalf. This individual must be dependable, reliable and capable of handling a position of power and authority.

Forensic Investigation Cost (FIC)

Internal auditor in collaboration with qualified auditors should be able to conduct an audit of a company in accordance with regulatory standards, which is one part of excellent accounting professionalism that should be possessed by both. Professional fees for services rendered by professional are determined by this factor, as well as other factors such as professionalism and ethical considerations (Fachriyah, 2011).

In Agoes (2012), investigation cost is defined as "the amount of the charge as determined by a number of factors such as the risk associated with the assignment, complexity of services offered, quantum of expertise required to execute services at a proficiency level, the cost nature of the firm in question and other considerable factors." It is measured by the agreed fee paid to the professionals for the investigation exercise.

Litigation

Dispute resolution in Nigeria is based on English common law, according to Global Legal Insights (2013), and the legal system and manner of litigation in Nigeria are based on English common law as well. Nigeria, like other common law jurisdictions, has an adversarial system of adjudication, in which competing parties compete to obtain a decision that is most favourable to their position, and in which the Judge plays a non-inquisitorial role in the

proceedings. Litigations are measured by the amount recorded or incurred in the lawsuit

Claims and Indemnification (CI)

Cite (2008) posits claims as making a request for money, for property or for enforcement of a legitimate right as provided by law or asking for money due, for property, for damages or for enforcement of a right. To make this more honorable it must be filled appropriately. Claims and indemnification are measured based on amount awarded on a verdict in the judicial system.

Fraud Cases Reported (FCR)

Silverstone and Sheetz (2007), on the other hand sees it as an action that occurs in a social setting and has serious impact on parties involved. Fraud, according to him, is an opportunistic sickness that manifests itself when greed meets the potential for deception. According to Pasco (2009), fraud is characterized by trickery, deceit, and false statements, and it may also include an omission or purposeful refusal to convey material facts that are relevant to the case. This is measured by the amount of fraud cases captured and reported.

Non-Performing Loans (NPL)

Bank loans and advances are short-term facilities. Mostly in commercial banks, the worth of loan pool rest on credit evaluation metrics carried out by the responsible officer. The credit expert's role is to make sure that loans granted have a decent qualitative composition. Such include high liquidity ratio, minimum risk and moderate maturity structure. These qualities are vital in guarantee repayment on facilities when the fall due (Akpan, 2013). The non-performing loan is measured in terms of aggregate facilities due and over due by 90 days (principal and interest) and means of recovering it, is bad and doubtful.

2.12 INTEGRATED FINANCIAL REPORTING (IFR)

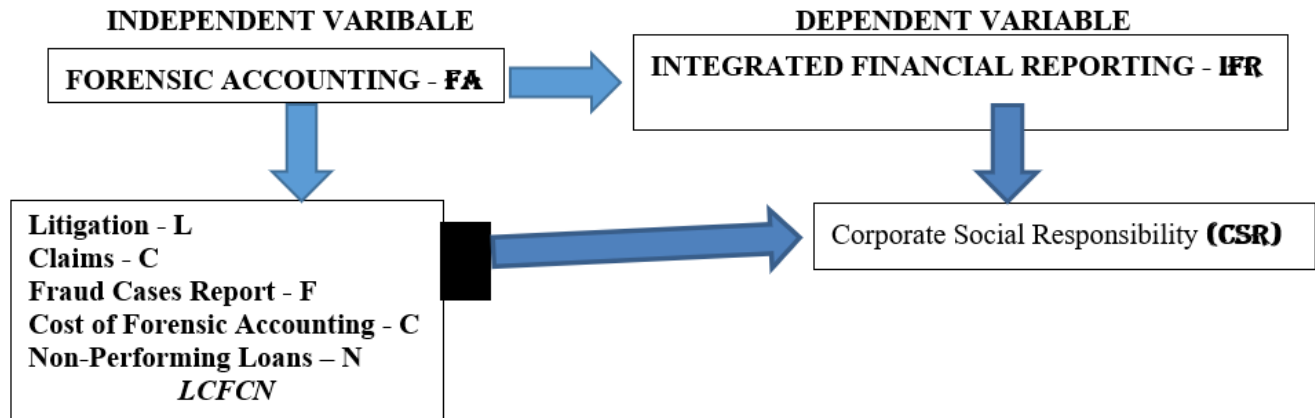
Essentially, Integrated reporting is an aspect of a corporate reporting structure. By definition, it is the totality of reporting as the strategy, business rules, norms, operations and prospects of an entity with its outwards of influences towards adding and creating values (IIRC, 2015). Specifically, IR is set rules blended with sustainability reporting and financial information into a unique document (Lipunga, 2015).

Corporate Social Responsibility - CSR

Sheldon was the first to introduce the notion of Social Responsibility (SR) into the world in 1924. As a result, it has become a worldwide topic of significant debate and interest for a variety of groups as well as the general public and academic institutions. A more responsible, open, and long-term approach to operating organisations has arisen as

a result of the Social Responsibility (SR) movement (Lindfelt and Tornroos 2006, Marrewijk, 2003). There has been a huge expansion of this discipline, which now includes a large proliferation of ideas, techniques, and terminologies such as social issues management, sustainable development, stakeholder management, among

others (Garriga and Mele, 2004). According to Carroll (1991), social responsibility (SR) encompasses all forms of social responsibility, including economic, legal, ethical, and philanthropic responsibilities. Summarily, it can be measured using the GRI index.



Conceptual Framework and Operationalization of Variables

2.2 Theoretically, this research work is anchored on the police man theory. The justification of the decision is that the rising rate in frauds, scandals and business interruptions as well as the need for fairness, accountability, and transparency in establishing good governance couple with synergies with the law enforcement agencies, this has positioned the specialists as the bloodhound who reviews accounting data sets in order to identify such criminal enterprise and transactions.

Policeman Theory

This theory was propounded by **Limperg Theodore** a Dutch Professor in the late 1920s. Until the 40s, this theory about auditing was the most widely accepted theory in the field. An auditor, according to this notion, is seen to work as a police officer by paying in depth attention not only on the figure on financial statements and accounts but to forestall the occurrence of misappropriation (Ittonen 2010). In current times, its explanatory values diminished as a result of the sharp shift in auditing theory, which limited auditors' responsibilities to giving credibility to that financial statements were true and fair at the time of the paradigm shift. As a result of the development of standards in auditing (ISA, 240; US SAS 99), which now require qualified professionals to exercise skepticism and demonstrate quantum expertise in understanding and mitigating errors, the policeman idea has once again gained favour (Zikmund, 2008). In the context of the investigation, the forensic investigator acts as a police officer or watchdog, investigating and uncovering illegal financial activities within the banking business, as well as revalidating the assurance or trust of the various stakeholder

groups. This study is full anchored on this theory despite other supporting theories in the sense that it lays serious emphasis on the increasing need of the services been rendered by the forensic examiner and their supervisory ability to both the stakeholders and shareholders. lastly the activation of forensic accounting in any institution restores financial discipline among stakeholders.

2.3 Empirical Framework

Allison (2021) determined if introduction a forensic accounting to BGSU is appropriate. Based on the outcome, implementation of a well-structured design curriculum programme for tertiary institution is relevant for forensic accounting course at BGSU. Lastly, the course provides lots of benefits to the Students since they have interest in forensic accounting.

Dada and Jimoh (2020) understudy forensic accounting and financial crimes using the Nigerian public sector. The outcome revealed that litigation support service had significant but negative effect (reduction) on frauds in the said sector. Thus, recommend expert engagement in conducting litigation processes where he serves as an expert witness by assist the court in drawing conclusion on issues which may not ordinarily have the perquisites knowledge.

The influence of anti-fraud, forensic accounting measures and the financial reporting of Nigeria government parastatals was investigated by Nangih and Ofor (2020) in their research. Their findings revealed that anti-fraud and forensic accounting tactics has favorable and statistically significant impact on the financial reporting of government MDAs and parastatals at levels of 1% and 5% respectively. Along with the establishment of appropriate anti-fraud policies and strategies. The recommend forensic audit

section be established in all MDAs to audit past government records and produce forensic evidence when there is suspicion of fraud. This will help to improve the relevance, reliability, understandability, fairness, and comparability of government financial reports even further.

With the goal to fighting contemporary fraud surge in the public sector, Rabi'u et al (2018) undertook a study to evaluate the correlations between fraud rate and the aspects of FTT, which was published in the journal *Fraud Triangle Theory*. Findings show there is a statistically significant association between FTT and fraud rates in the public sectors (p-values 0.001 for pressure and opportunity, and 0.024 for rationalization). Relevance in the real world According to the conclusions of the study, fraud prevention activities can be improved by forensic accountants and anti-graft authorities in Nigeria through improving the existing control mechanisms in fraud prevention initiatives. At the conclusion of the investigation, recommendations are made to improve fraud awareness and training programmes for federal government personnel.

According to Bassey (2018), forensic accounting is important because it has an impact on the management of fraud in microfinance organizations in Cross River State. The results of the regression revealed that all variables have negative impacts, as predicted. Moreover, the study revealed that failures in audit over the course of several decades have precipitated a shift in accounting, leading to the conclusion that forensic accounting can play a significant role curbing malpractice and corrupt practices.

Mbah (2018) investigated forensic accounting and performance of Nigerian financial sector. The analysis showed that expert opinion had significant effect on the NPM, PAT, RE and EPS of banks. It was also observed that forensic audit influences profit after tax of Nigerian banks. The study also revealed that forensic audit has significant effect on retained earnings and dividend per share of Nigerian banks. With the findings, the researcher recommends that those at the helms of banks affairs should compel the use of forensic in making up their financial information as it will help in increasing the profitability.

In Olukowade and Balogun (2015), conducted a critical examination on the extent to which forensic accounting has an impact on fraud management in firms. The researchers found a statistically significant relationship between fraud management as a result of forensic accounting and the good institutional practices. In conclusion, management should be more proactive in their obligations, as stated in the organization's purpose statements, by publishing and implementing punishments against negligent personnel, disseminating fraud policies, and ensuring that fraud is kept to the barest minimum possible. This research found that

firms with management-related problems should seek the assistance of forensic accountants because they are more independent and provide better services that prevent ill practice from taking place within the organization, among other things.

Clayton, et al (2015) conducted an assessment of an overview of numerous dimensions of forensic accounting. According to the findings, the vast majority of forensic accounting work is performed outside of investigations in a wide variety of practice field across the board. In the event of intellectual property infringement, claims for lost product sales and profits may be made. Forensic accountants are frequently called upon to go beyond lost sales to uncover further losses relating to the consequences of price fluctuation, reduced economies of scale, and the presence of competition etc. Companies frequently use forensic accountants to assist them in the preparation of claims, the assessment of losses, and, in most cases, the refutation of the position of the insurance company's experts. Forensic accountants can help companies determine and assess their sustained loss, as well as give expert testimony services to help them defend their conclusions.

Mahua, Kiran, and Shalini (2013) are three women who have made significant contributions to the society. A forensic accounting approach to identifying white-collar criminals has become increasingly necessary in recent years, as law enforcement authorities with insufficient competence have failed to bring these perpetrators to justice. This is explored in detail in their paper. Furthermore, technology has advanced significantly, allowing fraudsters to become much more sophisticated in their use of it. On the other hand, our accountants have not kept pace with technological advancement, and despite having extensive knowledge in fraud detection, the majority of accountants are unable to decode technologically backed up frauds.

Sharma, (2020) conducted research to better understand the difficulties that banks confront in detecting fraud. It was obtained through a questionnaire filled out by 120 bank employees from four banks in the National Capital Region. According to the findings, the most significant obstacles that banks have in identifying fraud are a lack of consumer vigilance, a lack of customer reporting, and a lack of information exchange with other institutions and organizations. It was recommended that banks be serious in validating the reports filed by customers and report cases of frauds to the appropriate authorities as soon as they occur in order to address the obstacles, also internal and external audits must be completed on a timely basis at the branch level.

Sa'id, and Abas Azmi, (2020) examined the challenges in combating fraudulent practices: evidence from Nigerian public sector and found that among others that the prevalence of God fatherism in the Nigerian public sector. God fatherism truncates decisions, jeopardizes independence and party system structures, political immunity which reduces governance by an excluding punishment, protection rights and the political arena.

In the research of, Safiyanu et' al (2019) examined if the use and implementation of forensic accounting investigation in Nigeria had impact on the detection of financial crimes. The research centered on previously published articles on the subject and strategies used in its implementation. According to the findings of the study, forensic accounting services had substantial effect on the discovering of financial fraud. Findings have shown that expert investigations are significant and a positive step in the detection of misappropriations in the country. As a result, the paper recommends that professional accounting bodies such ICAN and ANAN encourage specialization in forensic accounting services among professional accountants currently in practice.

As a result of the insufficient of empirical assessment of factors that could impact the need of forensic accounting on integrated financial reporting of quoted Ghana banks in Africa countries in past research, there is a gap in the literature, particularly in developing nations that fall within sub-Saharan Africa. Insights from the studied empirical findings, there is a well establish gap based on the different views of the scholars. This could be due to differences in the variable metric, the study period, the number of control variables used or not, methods, data type used, and the tools used for analysis. This study filled in the gap by examining the effect of forensic accounting on integrated financial reporting of quoted Ghana banks, taking into account variables such as claims, non-performing loans, litigations, fraud cases reported, cost of forensic investigations, and corporate social responsibility that have not been extensively tested in other studies.

III. METHODOLOGY

This study used a secondary quantitative research design, which entails collecting quantitative data from pre-existing, reputable sources, such as the one from which the data for this work was gathered. The quantitative data used in this study is referred to as secondary data. It was gathered from the Bank of Ghana - Central Bank (<https://www.bog.gov.gh/wp>), ceicdata.com/en/ghana, and data.worldbank.org, 2004 – 2020. Each bank's performance on the report was used to create a panel data set with a sample size of 170. Secondary quantitative research was

utilized to assess the link between the study's two primary variables and to provide a helpful recommendation based on the findings. The data analysis method used in this paper is the descriptive statistics (mean and standard deviation will be used to summarize the data), panel regression analysis, which will include the Hausman test, a fixed effect or random effect regression model (depending on the result of the Hausman test), and Pearson correlation. In this study, the variables of interest are forensic accounting and integrated financial reporting. Litigation, Claims, Fraud cases reported, Cost of Forensic Accounting and non-performing loans are all forensic accounting indicators, whereas Integrated financial reporting (CSR) is the dependent variable. Stata 16.0 was used to analyze this paper.

Table 1: Variables Measurement

Variables	Denote	Measurements (unit)
Integrated Financial Reporting	IFR	Billion (Naira)
Litigation	L	Percentage (%)
Claim	CL	Percentage (%)
Fraud cases Reported	FCR	Percentage (%)
Cost of Forensic Investigation	CFR	Million (Naira)
Non-Performing Loans	NPL	Percentage (%)

Table 2: List of the selected Quoted Banks through purposive sampling for this study

No	Selected Quoted Banks in Nigeria
1	Zenith Bank
2	GTCO
3	Standard Chartered
4	Ecobank Nigeria
5	United Bank for Africa
6	Fidelity Bank
7	Barclays
8	Access
9	STANBIC IBTC

Source: Author

This study will adopt the model of Mbah, Paulinus (2019). The justification for adopting the model is that both studies

share similar variables, hence, making it suitable for adaptation and modification. See below as stated:

$$FAUD = \beta_0 + \beta_1 NPM_{t-1i} + \beta_2 PAT_{t-1i} + \beta_3 RE_{t-1i} + ut \dots$$

Modified as:

$$IFR_{it} = \beta_0 + \beta_1 Lit_{it-1} + \beta_2 Cl_{it} + \beta_3 FCR_{it} + \beta_4 CIF_{it} + \beta_5 NPL_{it} + \varepsilon_{it}$$

Where, β = coefficient of the variables, i = i th bank, t = period under review, ε = error term

$$CSR_{it} = \beta_0 + \beta_1 Lit_{it-1} + \beta_2 Cl_{it} + \beta_3 FCR_{it} + \beta_4 CFI_{it} + \beta_5 NPL_{it} + \varepsilon_{it}$$

Global rule: Reject the null hypothesis if $P < \alpha$ and do not reject if otherwise. Where α is the significant level (1%, 5%, 10% respectively)

IV. RESULTS AND FINDINGS

4.1 DESCRIPTIVE STATISTICS

Variable	Obs	Mean	Std. Dev.	Min	Max
Litigation	136	24.04053	5.813441	12	33.6558
Claims	136	14.35082	.2755516	13.8788	14.8228
Fraudcases~d	136	21005.75	11249.81	1774	40277
Costoffore~l	136	476.0675	246.0773	54.53	897.605
nonperform~s	136	33.00725	11.92001	7.678	53.3844
CustomerBase	136	62.71324	11.67771	28	80
PAT	136	66.69118	12.42668	31	85
Debttoequity	136	19.24265	4.834285	5	25
Currentratio	136	23.45588	5.242091	8	30
CSR	136	71.27206	12.67396	37	90

The total observation for all variables is 136 with litigation ($M=24.04$, $SD=5.81$) implies that on the average Litigation in Ghana banks represent about 24.04% with variability of about 5.81%, min of 12% and Max of 37% approximately. Claims ($M=14.35$, $SD=0.28$) means that on the average claims in Ghana Banks represent about 14.35% with variability of about 0.28%, min of 14% and max of 15%. Fraud cases ($M=21005.75$, $SD=11249.81$) tells us that on the average, number of fraud cases reported in Ghana banks is about 21005.75 with variability of about 11249.81. Cost of forensic investigation ($M=476.07$, $SD=246.08$) means that on the average cost of forensic in Ghana banks represent about 476.07 million GHc with variability of about 246.08 million GHc. Non-performing loan ($M=33.01$, $SD=11.92$) means that on the average non-performing loans in Ghana banks represent about 33.01% with variability of about 11.92%. Customer Base ($M=62.71$, $SD=11.68$) implies that on the average customer base in Ghana banks represent about 62.71% with variability of about 11.68%. PAT ($M=66.69$, $SD=12.43$) means that on the average, profit after tax in Ghana Banks represent about 66.69% with variability of about 12.43%. Debt to equity ($M=19.24$,

$SD=4.83$) means that on the average, debt to equity in Ghana banks represent about 19.24% with variability of about 4.83%. Current ratio ($M=23.46$, $SD=5.24$) means that on the average, current ratio in Ghana banks under study represent about 23.46% with variability of about 5.24%. CSR ($M=71.27$, $SD=12.67$) implies that on the average participation of Ghana banks in corporate social responsibility represent about 71.27% with variability of about 12.67%.

4.2 Normality Test

Shapiro-Wilk W test for 3-parameter lognormal data

Variable	Obs	W	V	z	Prob>z
CustomerBase	136	0.96804	3.420	-1.133	0.87137
PAT	136	0.96599	3.533	-1.161	0.87709
Debttoequity	136	0.92688	7.825	0.520	0.30160
Currentratio	136	0.93268	7.204	0.234	0.40766
CSR	136	0.95219	5.116	-1.128	0.87039

We can see from the output of normality test in the using Shapiro-Wilk test for normality shows that $P > 0.05$ for the response variables of Ghana banks under study which means we do not reject the null hypothesis and we conclude that the data is normally distributed.

4.3 Analysis of Data

CSR	FE $P < 0.05$	Hausman P $0.050 < 10\%$
CLAIMS	$\beta = 64687.53$, $P 0.052 < 0.10$	
NON-PERFORMING LOANS	$\beta = -2.93$, $P 0.054 < 0.10$	

Authors extract.

H0s: LCFCN have no significant effect on the Co-operate Social Responsibility (CSR).

H0sa: Litigation, Claims and Non-performing loans has no significant impact on corporate social responsibility.

For Ghana banks, the fixed effect model was specified for CSR ($P 0.050 < 0.10$). Besides, Claims ($\beta = 64687.53$, $P < 0.10$) as we can see in the appendix part 1 means that we reject the null hypothesis at 10% level and conclude that claims are statistically significant and has a positive effect on corporate social responsibility for the reviewed banks. This implies that for every one unit increase in claims there is a 64687.53 increase on the CSR.

In the same vein, the non-performing loans ($\beta = -2.93$, $P < 0.10$) as seen in appendix part 1 means that we reject the null hypothesis and conclude that Non-performing loans has statistically significant but has a negative effect on corporate social responsibility for the he reviewed banks.

V. SUMMARY OF FINDINGS

Based on the above analysis, we can summarize the key findings as follows: forensic accounting and integrated financial reporting have a significant relationship in Ghana. This suggests that, despite the costs, forensic accounting is a very appropriate approach to be considered in order to have good integrated financial reporting for Ghana, which agrees with the literature as forensic accounting alternatively called investigative accounting or financial inquiry, can be said to be a new field in accounting in Ghana spring up based on essence to ensure all round quality reporting.

Furthermore, Ghana banks reveal that two forensic accounting variables, claims and non-performing loans, have an effect on one of the corporate social responsibility, with claims having a positive impact and non-performing loans having a negative significant impact on corporate social responsibility.

5.1. Recommendations

Based on the above findings the study recommends amongst other;

1. To prevent and detect fraud, all banks must have appropriate and independent forensic accounting, as well as good financial reporting.
2. The central bank of Nigeria and Bank of Ghana - Central bank should as a matter of urgency recommend forensic accounting in order to have unbiased integrated financial reporting.
3. Banks in Ghana have a massive non-performing loan profile, which has a detrimental effect on their performance. To achieve proper debt administration, forensic accounting should be used always.

5.2 Contribution to Knowledge

Our study contributes by extending the frontiers of knowledge in understanding forensic accounting impact on IFR to Ghana banks. It is the first ever novelty to consider Ghana with veritable variables such as Non-performing loans, Claims and indemnity, fraud cases reported, and CSR which is an evolving trend. However, these variables had different substantial and significant impacts. It integrated the policeman among others as been paramount for ensuring safeguard of quality reporting and the methodological approach of adopting, modifying a model and analyzing data with a sophisticated combination tool i.e. Panel

regression and Hausman in specifying appropriate estimator that alone makes it unique and gives it a better precision. See

$$IFR_{it} = \beta_0 + \beta_1 L_{it-1} + \beta_2 C_{it} + \beta_3 FCR_{it} + \beta_4 CFI_{it} + B_5 NPL_{it} + \varepsilon_{it}$$

$$CSR_{it} = \beta_0 + \beta_1 L_{it-1} + \beta_2 C_{it} + \beta_3 FCR_{it} + \beta_4 CFI_{it} + B_5 NPL_{it} + \varepsilon_{it}$$

5.3 Suggestion for Further Research

Based on our findings, the researcher suggests that the study of forensic accounting and integrated financial reporting of selected banks Ghana should be extended to other countries and sectors of such as Agric, Servicing, Manufacturing, Pensions, Health, Taxation, the oil and Gas sector, among others to see if same result will be achieved.

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Appendix

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random		
Litigation	-.3769666	-.3931256	.0161591	.
Claims	64687.53	-6.167134	64693.69	33013.07
Fraudcases~d	-.2582225	-.2517658	-.0064566	.
CostofFore~l	-60.41847	11.6602	-72.07867	36.75423
nonperform~s	-2.933975	-2.826263	-.1077114	.

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(1) = (b-B)'[(V_b-V_B)^(-1)](b-B)
 = 3.84
 Prob>chi2 = 0.0500

Random-effects GLS regression Number of obs = 136
 Group variable: Banks Number of groups = 8

R-sq: Obs per group:

within = 0.0258	min = 17
between = 0.1498	avg = 17.0
overall = 0.0348	max = 17

corr(u_i, X) = 0 (assumed) Wald chi2(5) = 797.11
 Prob > chi2 = 0.0000

CSR	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Litigation	-.3931256	.6659981	-0.59	0.555	-1.698458	.9122066
Claims	-6.167134	9.317222	-0.66	0.508	-24.42855	12.09429
Fraudcasesreported	-.2517658	.1816439	-1.39	0.166	-.6077813	.1042497
CostofForensicAccountingMill	11.6602	8.358658	1.39	0.163	-4.722465	28.04287
nonperformingloans	-2.826263	1.540562	-1.83	0.067	-5.845709	.1931823
_cons	0	(omitted)				
sigma_u	6.4568108					
sigma_e	11.141305					
rho	.25142105	(fraction of variance due to u_i)				


```
. xtreg CSR Litigation Claims Fraudcasesreported CostofforensicAccountingMill nonperformingloans, fe
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Fixed-effects (within) regression      Number of obs   =      136
Group variable: Banks                 Number of groups =       8

R-sq:                                Obs per group:
    within = 0.0878                    min =      17
    between = 0.1403                   avg =     17.0
    overall = 0.0142                   max =      17

                                F(5,123)    =      2.37
corr(u_i, Xb) = -0.9291                Prob > F      =     0.0433
```

CSR	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Litigation	-.3769666	.6520814	-0.58	0.564	-1.667722	.9137886
Claims	64687.53	33013.07	1.96	0.052	-659.8306	130034.9
Fraudcasesreported	-.2582225	.177701	-1.45	0.149	-.6099707	.0935258
CostofforensicAccountingMill	-60.41847	37.69272	-1.60	0.112	-135.0289	14.19195
nonperformingloans	-2.933975	1.507913	-1.95	0.054	-5.918797	.0508471
_cons	-893954.2	456167.2	-1.96	0.052	-1796909	9000.868
sigma_u	19.38058					
sigma_e	11.141305					
rho	.75161128	(fraction of variance due to u_i)				

PART 3: DO FILES

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tsset Banks Year, yearly
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xtreg CSR Litigation Claims Fraud cases reported Cost of Forensic Accounting Bill nonperforming loans, fe
estimates store fixed
```

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xtreg CSR Litigation Claims Fraud cases reported Cost of Forensic Accounting Bill nonperforming loans, re
estimates store random
```

```
hausman fixed random
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