Development of Church Information System (A Case Study Approach)

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Abstract

Church as one of the community service organization has a wide range of activities and transactions to accommodate the needs of the congregation. Because the church also has a fairly complex business processes and systems should have the information including data storage to facilitate an integrated and centralized church in storage, management, and presentation of data. This study discusses the analysis, design, and construction of information system of the church as the solution of the existing problems in the XYZ church; such data are not integrated and dispersed in the respective church staff.

Keywords: Development, Church, Information System

1. Introduction

As one of the organizations engaged in community service, the church has a wide range of activities and transactions to accommodate the needs of the congregation, both in terms of ecclesiastical activities and financial transactions of the church. The church would also have a considerable amount of data in a large and fairly high complexity. Under these conditions, the church should have integrated and centralized data storage to facilitate the storage, management, and presentation of data.

Bajdor and Grabara described the information system is formed by the information itself [1]. It means that the diversity and multiplicity of occurrence of information contributed to the need for them together to categorize, which automatically led to a certain, separate groups of information which are formed into information systems. And the development of information system can be drawn as a part of implementation of information through technology, analysis, design, implementation and support.

The system can be defined as a set of interrelated components that work together to achieve the desired results. Information technology is a combination between computer technology (hardware & software) with telecommunications technology (network data, images, sounds). Thus, the definition of Whitten & Bentley [2] concluded that the information system is an arrangement of people, data, processes, and information technology that interact to collect, process, store, and provide the information needed to support the organization.

An information system according to O’Brien & Marakas [3] is an organized combination consisting of people, hardware, software, network communications, data sources, rules and procedures that store, acquire, transform, and distribute information in an organization.

But the current problems are recording and storage of data on the XYZ church still manually by utilizing the resources of different applications such as paper or a program such as Word and Excel. This weakness resulted in data storage separated and not...
centered and complicate the administration of the church employees in acquiring and managing information that requires a long time to present a specific report. This weakness also increases the risk of data loss, either intentionally or unintentionally.

With the implementation of data storage in DBMS (Database management systems) is expected to help the church to eliminate data redundancy and produce consistent data, and generated a centralized data repository and can be equipped with integrated security and data access.

In addition, the development information system at XYZ church used the web-based application as a media renderer that specifically facilitate the congregation in worship accessing information, news weekly, or ecclesiastical activities and generally facilitate the congregation in accessing general information related XYZ Church.

The purpose of this study is to analyze and understand the business processes that are taking place in the church XYZ to find weaknesses that would be the definition of the church needs, and designing information systems that support the activities in the church.

2. Literature Review

Technology have been growing continuously in many aspects of human life, one of them is in the religious practice. For the last few years, the adoption of information and technology for communication in church is also growing. More and more people all around the world are turning to the internet and social media to find personal, social, and also religious information. The Ecclesiastical institution is devoting more and more resources to improve their presence on the web [4].

There are several studies how information and technology influence the church nowadays. Gunton [5] in his research presented the important of information by developing an understanding how the church uses information in learning and the result showed that the exploration may help church organization, church leaders and lay people to consider how information can be used to grow faith, develop relationship, manage the church and respond the religious knowledge.

More research came from Bolu [4], he discussed the adoption of information and communication technology in church communication for growth in Nigeria. He analyze the perception of church leaders on internet usage for church growth, communication, as well as the deployment of church ICT infrastructure for church administration and human capital management. The result showed that most churches have email address and website but there is little communication between members and church leaders. In addition, not many churches upload bible studies, music, and other information on their website for people to download. Finally although while most churches do not have ICT personnel and infrastructure well, they totally agree that they need to have one.

Harvey [6] in his research examined selected technological advance and their influence on the life and work of the church among four dimension, there are Authority (Control) is the methods and means of establishing and maintaining adherence to a set of beliefs among a population of humans; Evangelism is propagation of the Gospel message of Jesus Christ among the unconverted and bringing them to faith in Jesus Christ as Savior and Lord; Community is the gathering of believers into functioning groups for education, nurture, and fellowship, worship is corporate gatherings for adoration, praise, and celebration of mighty acts of God.

On the other hand, Seller said that information technology is very important for church. In his Journal entitled Technology and Ministry, Seller said that “Technology is a major issue for every church, because it is a major issue in society” [7]. Seller also
describe that website technology is meant to function as a form of community for congregation, it have a way for people to interact online, to connect with the church and with others in the congregation, and to stay connected when they are away, and also update users on what’s happening within the church.

Grinter [8] presented the results of their research in four sections focused on different aspects of ministry served by ICTs: Corporate work; Sunday Worship Service; Coordinating the Church Community; and Outreach to People outside the Congregation. Further, Grinter also describe that technologies play an important role in the management of the church to support financial data, payroll for any employees, service for community and so forth. Further study come from Zech [9] in his research, he tried to find out the effective design of church website. Technology is a mainstay in most people lives especially for religious purpose, using website the church can provide information and keep members engaged with the church community.

3. Methods

The data collection was conducted in order to determine the information needs of the user. Thus, you will know what information is needed, so that the information obtained is more accurate. Data collected through: (1) A Literature Review conducted by searching from books and articles related to the needs of the user; (2) Field studies conducted with the following steps: Conducting interviews with asking questions to sexton of XYZ church and collect relevant data can be obtained to identify the information needed. Analysis and design of information systems at XYZ church uses an object-oriented approach to the modeling system.

4. Results and Discussion

4.1. Analysis the Current Business Process

Currently the system is running in XYZ church is not using a computerized system. All the activities carried out manually by utilizing the resources of different applications such as paper or a program such as Word and Excel. Exchange of information between actors executing the system is done by face-to-face or using telephone and manual recording on paper. Problems faced XYZ church included:

- The process of recording and storing data on the church still done manually so cumbersome and time consuming.
- Data storage is fragmented and not centralized as well as complicate the church administrative personnel in obtaining and managing information that requires a long time to present a specific report.
- The risk of data loss, either intentionally or unintentionally, due to data storage that is not integrated.
- Data security risk because there is no limit data access rights.

4.2. The Proposed Solutions

Based on ongoing analysis system which has been described, it can be concluded that problems arise. The main problem is the process of recording and storing data on XYZ church is still done manually by utilizing the resources of different applications such as paper or a program such as Word or Excel. Therefore we proposed web-based system that can
support the current business processes. The table below presents a comparison between the old systems to the proposed system.

**Table 1. Comparison between Old and New Systems**

<table>
<thead>
<tr>
<th>Functional Category</th>
<th>The Old System</th>
<th>The New System</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Data storage congregation that has not been systematically</td>
<td>• Data storage congregation that has been integrated with the database.</td>
</tr>
<tr>
<td></td>
<td>• Storage is not yet a systematic form (in hardcopy).</td>
<td>• Forms are available in the system in softcopy with download facility.</td>
</tr>
<tr>
<td></td>
<td>• Data recording church still done manually using resources such as different paper, word, and excel.</td>
<td>• Data recording is done systematically directly integrated with the database.</td>
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<tr>
<td></td>
<td>• The church members can not directly see the personal data, must go through the church staff.</td>
<td>• The congregation could see the personal data directly in the system and can perform the data conversion of personal data in accordance with the church system validation according to user roles owned by the church.</td>
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<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Church members</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Communities)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Events / Activities</td>
<td>• Presentations of a list of events (news congregation) are still using a paper manual.</td>
<td>• Church News is available online in the system.</td>
</tr>
<tr>
<td>Finance</td>
<td>• Recording financial data churches still manual</td>
<td>• Recording financial data is systematically integrated church with a database.</td>
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<tr>
<td></td>
<td>• Presentation of financial data churches still manual and requires quite a long time.</td>
<td>• Presentation of financial data churches need a faster time as has been the systematic storage and can be seen by the whole congregation located anywhere (online).</td>
</tr>
</tbody>
</table>

Use case is a static description of how the system is used by the user or a business or other systems [10]. Use case diagram below shows how the use case interconnected systems and how a user can use it. The purpose of the use case diagram is to identify the "use," or "use cases", from a system—in other words, to identify how the system will be used and the use case diagram is a way to facilitate the documentation of the system activity.
Here is the example of website wireframe that is inside this application (Figure 2 and Figure 3).
Figure 2. A Website Wireframe for Add/Edit Congregation Data
Figure 3. A Website Wireframe for Add/Edit Financial Data

In this picture illustrates the relationship between entities or tables that are used to develop this application (Figure 4).

Figure 4. A Website Entity Relationship Diagram

The system is planned to be hosted by using the services of the vendor (third party) that provide hosting services, where the system will be accessed by using a modem connected to the Internet (See Figure 5).
5. Conclusion

By analyzing the business process at XYZ church, it can be concluded that the main problem staff for management procedure of worship and financial staff at XYZ Church face difficulties in recording data such as data ecclesiastical church, finances, church activities, etc., for recording data using resources different applications such as paper and different documents such as Word and Microsoft Excel documents. This has an impact on accessing and managing data will also be difficult and require considerable time.

Based on the analysis, this study resulted in the proposal design and development of information systems that will encompass all activities of XYZ Church. With the design and construction of information systems is the storage of all data XYZ church be centralized and integrated in a single system. This system provides an interface to access and manage data ecclesiastical for users that can be accessed online so that staff for management procedure of worship and financial staff can more easily and quickly make accessing and managing data in accordance with their needs. In addition to finance officers of the church, this system also provides the interface for the church. The church can do its own access and management of personal data without the need to contact and communicate directly with church officials staff.

The system also provides a presentation of the profile information such ecclesiastical church, church organization profiles, schedules and news that ecclesiastical church and non-church can more easily obtain relevant information about the church. Moreover this system provides convenience for the church to register as a provision of an online registration form which can be downloaded with the criteria for: Admission into the church, Registration for baptism, Registration for the wedding, and Registration for catechism.

References
