Developing The Framework Of Information And Communication Technology Strategic Planning For State Islamic Universities In Indonesia

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Abstract-Many previous studies have shown that the Information and Communication Technology Strategic Planning (ICTSP) process is often failing in the Information Communication and Technology (ICT) implementation. The existing ICTSP frameworks are not universal. The purpose this study is to develop the ICTSP frameworks that in line with the concept of Islamic values, system, culture, mindset, bureaucracy, and politics prevailing in the Islamic Higher Education in Indonesia (IHE's ICTSP framework). In this developmental study, both qualitative and quantitative methods were followed. The data collection techniques included Focus Group Discussion and Survey. Besides the qualitative analysis methods, the researcher used descriptive and inferential statistics with the Wilcoxon Signed Ranks Test method. The IHE's ICTSP framework was developed in five stages, namely: developing initiatives, determining the direction of ICT implementation, assessing and analyzing the organizational environment, formulating strategies, and designing ICT implementation. Statistically, analysis results are showed that the effectiveness of ICTSP process stages is no difference; the second, the completeness of ICTSP process stages and activities component is a difference; the third, the compatibility of the ICTSP process with an institution background is a difference; and the fourth, the term and meaning of ICTSP process is a difference too.

Keywords: Framework, IHE's ICTSP, Values, Islamic Higher Education.

Introduction

In the global economic era, many organizations and business owners exploit competitive advantage, increase market share, increase efficiency, reduce costs and reduce bureaucracy through implementing the Information and Communication Technology (ICT). Despite organization leaders' awareness of the strategic importance of ICT implementation, the percentage of failure is still very high (Dwivedi, Wastell, Laumer, Henriksen, Myers, Bunker et al., 2015; Ebad, 2018; Fenech & Raffaele, 2013). The results of previous studies indicate that ICT is often ignored in both corporate and public organizations due to the lack of strategic planning process (Hackney & McBridge, 2002). The primary reason for this failure is because of human and social factors in the organization (Gwo & Rong, 2003; Hackney & Little, 1999). The other factors are social and organizational, including, project management, enterprise system, and user resistance (Dwivedi et al., 2015). Referring to Sweis (2015), there are three factors that result in the failure of ICT implementation, namely: high degree of customization, delayed changes in the design stage and underestimating the timeline. It is also beleived that ICT implementation failures originates from managerial and technical factors (McManus & Harper, 2007). The ICT implementation failure can be defined as "either the implemented system not meeting the user expectations or inability of creating working or a functioning system" (Ewusi-Mensah, 2003, p.7).

Other studies reported that the human and social elements of the organization contribute 90% to the success of the ICT implementation (Gwo & Rong, 2003). In addition, the willingness, ability and competence, and skills of staff and users are crucial factors in the success of the ICT implementation (Teo & Ang, 2000). The poor leadership, poor communication, meagre competencies, and poor methodology are the main managerial factors. The inappropriately defined software requirements, improper technical design and tools, and poor technical support are the technical factors (McManus & Harper, 2007). Stakeholder involvement during the ICTSP process is an essential part of the successful ICT implementation (Clarke, 2001; McNicol, 2005; Tsiakkiros & Pashlardis, 2002). According to Fenech and Raffaele (2013), the lack of project planning and direction (39.28% - 44 criteria), project management and implementation (33.04% -37 criteria), and user management (27.68% - 31 criteria) contribute to the

failure. Factors causing failure include: lack of planning, rejection of change, lack of understanding required by users, government regulations, weak realignment of business processes, and the need of training (Ebad, 2018). In the context of successful ICT implementation, the critical success factors include human dimension, social dimension, and intellectual dimension (Kurti, Baroli & Sevrani, 2013).

Although some Information and Communication Technology Strategic Planning (ICTSP) frameworks have been proposed by academics and practitioners, failures in achieving competitive advantage still occur (Hartono, Albert, Lederer & Youlong, 2003; Hevner & Studnieki, 2000). To be able to develop a successful ICTSP framework, an appropriate approach to the organizational environment is needed. There is no universal framework of ICTSP for all forms of organizations and the ICTSP framework exists as merely an approach (Raja, 2003). More attention needs to be paid to the condition of the people during the ICT implementation (Islamic Development Bank [IDB], 2003). In a context where most people are Muslim, it is vital to incorporate Islamic values into the ICTSP process, in addition to social, political, and cultural factors. There is often a rejection of technological innovation among people in developing countries, uniquely when it is not aligned with their aspirations and it threatens cultural values.

Based on the description above, it can be concluded that: (1) many organizations in the ICT implementation are still not based on the ICTSP process; (2) the existing ICTSP frameworks still encounter failure when they are used as a guideline in the ICTSP implementation; (3) the compatibility of the current ICTSP framework with the culture, system, and social conditions of the other organization environment is uncertain; and (4) there is a need for ICTSP framework that is holistic and mutually with Islamic values.

The main objective of this study is to develop an ICTSP framework that is in line with the system, culture, bureaucracy, politic, mindset, and Islamic values applied in IHE in Indonesia.

Literature Review

The ICTSP is a sustainable planning activity to ensure that the ICT implementation is aligned with business strategies and simultaneously improves organizational processes, creates new business opportunities, and makes the organization competitive (IDB, 2003). It illustrates how ICT can support the achievement of visions and missions that are parallel to the direction of business strategy (Fitmaurice, 2000). ICTSP enables an organization using ICT to be more competitive, to identify costs and benefits, and to estimate the required ICT needs. The ICTSP is a guiding management process for the execution of the ICT actions of the organization (Silva, Vaz, & Souza, 2013).

There are several ICTSP frameworks, the first one of which is reviewed here is the framework of ICTSP for Malaysia Public Sector (MAMPU, 2003). It has four stages, namely (1) business environment analysis (why); (2) ICT environment analysis (what); (3) ICT strategic development (how); and (4) ICT implementation plan (when). The second is the framework of ICTSP by Bernard Boar (Boar, 2001). Its primary target is business organizations and it consists of three stages, namely (1) the business environment analysis; (2) the strategic formulation; and (3) the strategic implementation. The third is a framework proposed by Microsoft (Microsoft, 2011), named Microsoft Methodology Consulting Services (MCS), which is based on the technical recommendations of Control Objectives for Information and Related Technology (COBIT). It has five stages, namely (1) dealing with the generation of the IT strategic plan; (2) conducting surveys on the needs of IT; (3) mapping the desired situation; (4) preparing IT plan; and (5) implementing and monitoring ICTSP.

In the context of Islam and Sufism, strategic planning means intention, which is not a new matter in Islam. It has manifested together with the manifestation of the Earth and Islamic civilization (Fadillah, 2006). Additionally, it is mentioned in several verses of the Qur'an (QS al-Baqarah:30; QS ar-Ra'd:2; QS Shad:27; QS adh-Dhariyat:56; QS al-Hasyr:18), which proves that Allah SWT is the grandest planner (Ismail, 2000). The Prophet and his companies' *Hijra* (PBUH) also established the concept of strategic planning (Al-Qardhawy, 1999, 2003; Azman, 2003). Therefore, even though it is not explicitly mentioned in Islam, it is derived from Islam, which is then studied and developed by the West (Mohd. Sharifudin, 2004). Islamic values are the foundation of the ICTSP, including: (1) monotheism (Ismail, 2000; QS al-Baqarah:21,22,255; Wan Liz, 1996); (2) discussion or *syuura* (Al-Munawar, 2004; Naceur, 1994; QS Ali-Imran:159; QS Asy-Syura:38); (3) welfare orientation of *mashlahah* (Azman, 2003; Ismail, 2000; Madjid, 2000; QS al-Maa'idah:8; QS an-Nahl:90; QS an-Nisaa':58; Tahia, 2002); (4) justice or *adl'* (QS an-Nisaa':58; al-Maa'idah:8; an-Nahl:90); (5) responsibility or *mas'uliyah*; (6) balance or *tawazun*; (7) prioritization or *aulawiyyah* (QS al-Baqarah:219; QS an-Nur:35; QS Muhammad:19); (8) gradualness or *tadaruuj* (An-Nabhani, 2006; Djamil, 1997; QS al-Maa'dah:90-91; QS an-Nisaa':43); (9) success or *al-*

falah (Al-Munawar, 2004; Ismail, 2000; Mohd. Affandi, 1990; Naceur, 1994; Wan Liz, 1996); (10) trustworthiness (Mohd. Shahar, 1991; QS an-Nisaa':58; al-Anfaal:27; al-Ahzab:72); and surrender or *tawakal* (QS al-Maa'idah:58; Yunus:84; al-Hasyr:18; Ali-Imran:159; al-Kahfi:23).

Methods

This developmental research was conducted following the stages in Figure 1 in order to develop the IHE's ICTSP framework:
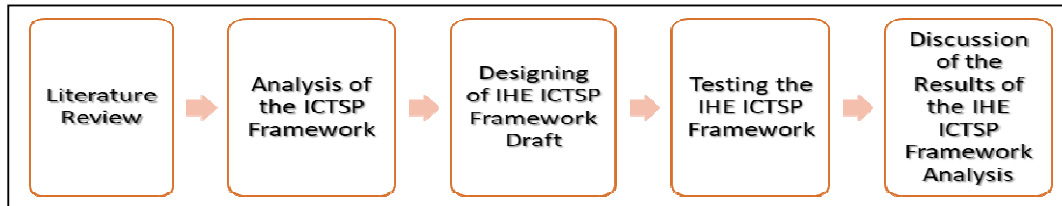
The first is reviewing the literature on ICTSP and background, culture, systems, sociology, politics, ways of thinking of people at the Islamic Higher Education in Indonesia and literature relating to Islamic values and management. Second is reviewing the primary literature, namely MAMPU's ICTSP and Boar's ICTSP in order to develop the IHE's ICTSP framework. The developmental procedure of the study is shown in Figure 2:
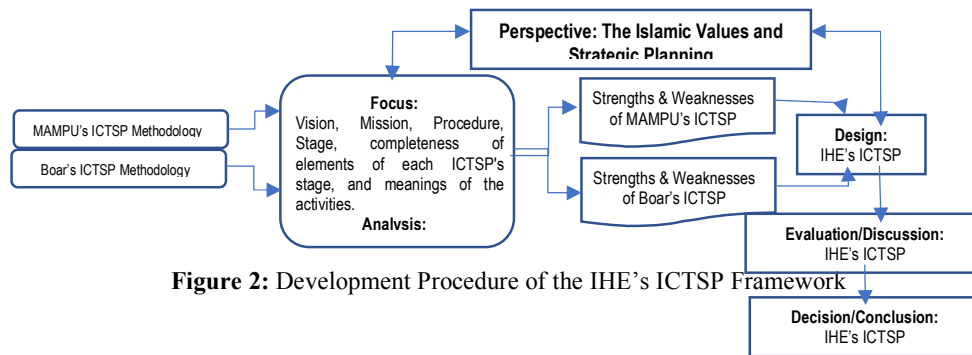
Figure 2: Development Procedure of the IHE's ICTSP Framework

In the first and second stages, the IHE's ICTSP framework was formulated by adapting MAMPU's ICTSP and Boar's ICTSP frameworks that were in line with Islamic values. The reseaches consulted with a group of Malaysian lecturers who were experts in ICT competence, strategic planning, and religion (*Sharia*) to ensure that the IHE's ICTSP framework was valid and in line with Islamic values prevailing in IHE. The designed framework was further refined based on these experts' feedback.

The fourth step was testing the effectiveness and the importance level of the IHE's ICTSP, MAMPU's, and Boar's ICTSP framework. The test was carried out using survey technique. The respondents were 159 from three Islamic Universities in Jakarta, East Java, and South Sulawesi in Indonesia. The distribution of respondents is presented in Table 1:

Table 1: Respondents of the Study

No	University	Number of Respondent
1	Islamic University X in Malang, East Java	63 (39.62%)
2	Islamic University Y in Makasar, South Sulawesi	44 (27.67%)
3	Islamic University Z in Jakarta	52 (32.70%)
	Total	159

The researcher employed a questionnaire as a measurement instrument for the ICTSP framework. The first was a questionnaire for measuring the importance level of the IHE's ICTSP framework, and the second for measuring the effectiveness of the MAMPU's ICTSP, Boar's ICTSP, and IHE's ICTSP frameworks if they were to be used as guides in implementing ICT at IHE in Indonesia. The questionnaire

consisted of four sections the first section measured the MAMPU's ICTSP framework, the second section measured the Boar's ICTSP framework, the third section measured the IHE's ICTSP, and finally, the fourth section had some open-ended items. The panel of experts who had been consulted in designing the instrument also validated the questionnaire and its items. This instrument was also piloted, and it was used after its reliability and feasibility were tested and verified.

To analyze the data, besides the qualitative methods which were followed to analyze the FGD data, the researcher employed both descriptive and inferential statistics. The descriptive methods were frequency and percentage used to measure the importance of IHE's ICTSP framework. Meanwhile, the Wilcoxon Signed Ranks Test method was used to measure differences in the effectiveness of the IHE's ICTSP, MAMPU's ICTSP, and Boar's ICTSP frameworks if used as guidelines for ICT implementation in IHEs in Indonesia. To address this objective, the following null hypotheses were postulated and tested:

H_{01}: There is no difference between the IHE's ICTSP and the MAMPU's ICTSP regarding the effectiveness of their ICTSP process stages.

H_{02}: There is no difference between the IHE's ICTSP and the Boar's ICTSP regarding the effectiveness of their ICTSP process stages.

H_{03}: There is no difference between the IHE's ICTSP and the MAMPU's ICTSP regarding the completeness of their ICTSP process stages.

H_{04}: There is no difference between the IHE's ICTSP and the Boar's ICTSP regarding the completeness of their ICTSP process stages.

H_{05}: There is no difference with the background of IHE between the IHE's ICTSP and the MAMPU's ICTSP regarding the compatibility of their ICTSP activities with the background of IHE.

H_{06}: There is no difference with the background of IHE between the IHE's ICTSP and the Boar's ICTSP regarding the compatibility of their ICTSP activities with the background of IHE.

H_{07}: There is no difference between the IHE's ICTSP and the MAMPU's ICTSP regarding the effectiveness of the terms and meaning of their ICTSP activities.

H_{08}: There is no difference between the IHE's ICTSP and the Boar's ICTSP regarding the effectiveness of the terms and meaning of their ICTSP activities.

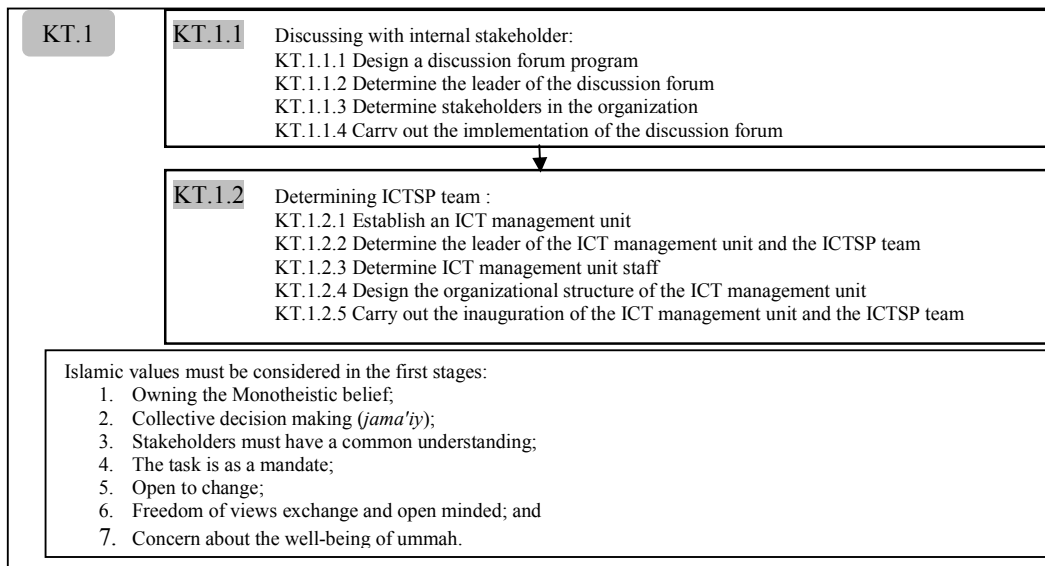**Design and Measurement of the IHE's ICTSP Framework**

Based on the FGD result, the IHE's ICTSP framework must address five questions of why, what, where, how and when. More specifically, the following questions were addressed in designing the IHE's ICTSP framework design:

1. Why? This stage helped the reseacher initiate discussions with the internal stakeholders and helped him determine the ICTSP team.
2. What? It helped the reseacher determine the direction of ICT implementation with core activities such as analyzing stakeholders need and preferences to formulate or reaffirm the vision and mission and objectives of the ICT implementation through discussions with key internal stakeholders.
3. Where? This question involved assessment and analysis of environment, and more specifically, internal and external environmental assessment, direction and alignment, discussion with internal stakeholders, and conclusion.
4. How? This question addressed the way in which ICT strategies were formulate with core activities such as strategy statement, statement of strategic objectives, change management, strategy determination, and discussion with internal stakeholders.
5. When? This question was meant to determine the timeline of the ICT implementation design. It included core activities such as mapping the design of ICT implementation, setting the ICT human resource development plan, predicting the financial implications, and obtaining stakeholders' approval.

It was important to follow Islamic values in each of these stages. What follows is a detailed description of these procedures:

1. *IHE's ICTSP activities in the first stage (developing initiative)*

Figure 3 shows the ICTSP activities in the why stage:

KT.1	KT.1.1	Discussing with internal stakeholder:
		KT.1.1.1 Design a discussion forum program
		KT.1.1.2 Determine the leader of the discussion forum
		KT.1.1.3 Determine stakeholders in the organization
		KT.1.1.4 Carry out the implementation of the discussion forum

KT.1.2   Determining ICTSP team :
KT.1.2.1 Establish an ICT management unit
KT.1.2.2 Determine the leader of the ICT management unit and the ICTSP team
KT.1.2.3 Determine ICT management unit staff
KT.1.2.4 Design the organizational structure of the ICT management unit
KT.1.2.5 Carry out the inauguration of the ICT management unit and the ICTSP team

Islamic values must be considered in the first stages:
1. Owning the Monotheistic belief;
2. Collective decision making (*jama'iy*);
3. Stakeholders must have a common understanding;
4. The task is as a mandate;
5. Open to change;
6. Freedom of views exchange and open minded; and
7. Concern about the well-being of ummah.
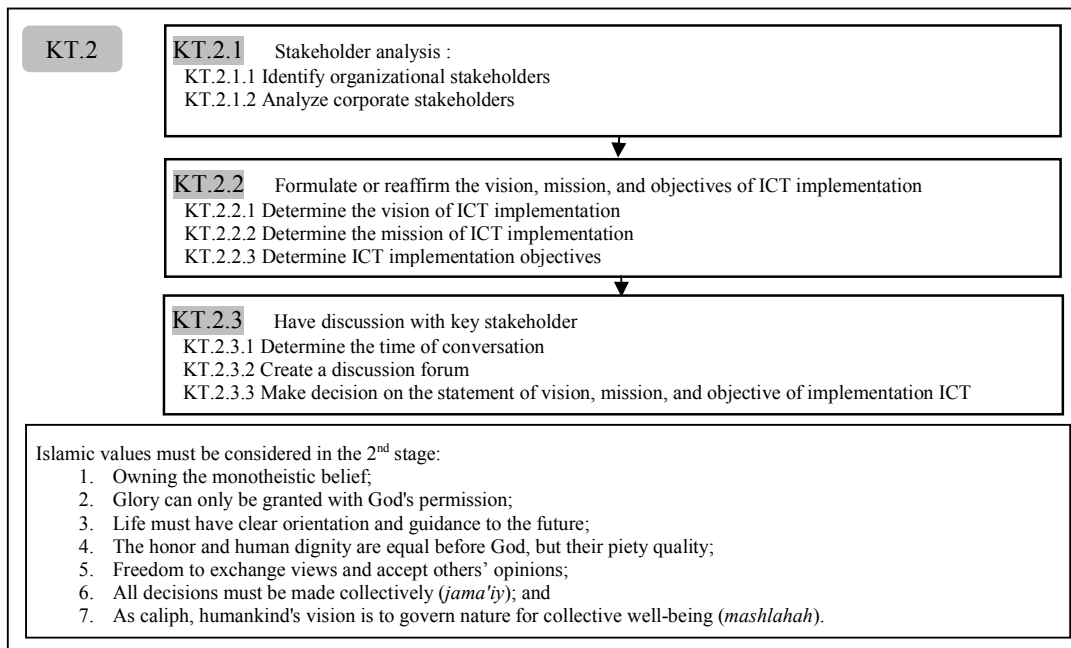
Figure 3: IHE's ICTSP Activities in the First Stage

In this stage, the reseacher had discussions with the internal stakeholders and determined the ICTSP team (Figure 3). The results of descriptive statistical analysis are presented in Table 2:

Table 2: Importance of the IHE's ICTSP Activities in the First Stage

Stages	Activities	Importance
C.1 Develop initiative (why)	C.1.1 Discussion with internal stakeholders	93.47%
	C.1.2 Determine the ICTSP team	88.98%
	Average	91.22%

As the results of the importance of activities in the first stage of the ICTSP process in Table 2 show, most respondents stated that these activities are necessary. The purpose of developing initiatives is to build an understanding of all stakeholders in making ICTSP. Stakeholders' understanding is one of the critical success factors in ICT implementation in IHEs in Indonesia. Key stakeholders must be involved in discussing the ICTSP plan with the objective that they understand the direction and purpose of ICT implementation. The next step is to determine the ICTSP team. In the ICTSP process, the team will be responsible for conducting studies in determining the competitive advantage of ICT based IHE management.

2. *IHE's ICTSP activities in the second stage (determining the direction of ICT implementation).*

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│  ┌───────┐   ┌─────────────────────────────────────────────────────────────┐ │
│  │ KT.2  │   │ KT.2.1     Stakeholder analysis :                           │ │
│  └───────┘   │ KT.2.1.1 Identify organizational stakeholders               │ │
│              │ KT.2.1.2 Analyze corporate stakeholders                      │ │
│              └─────────────────────────────────────────────────────────────┘ │
│                                         │                                     │
│              ┌─────────────────────────▼───────────────────────────────────┐ │
│              │ KT.2.2    Formulate or reaffirm the vision, mission, and      │ │
│              │           objectives of ICT implementation                   │ │
│              │ KT.2.2.1 Determine the vision of ICT implementation          │ │
│              │ KT.2.2.2 Determine the mission of ICT implementation         │ │
│              │ KT.2.2.3 Determine ICT implementation objectives             │ │
│              └─────────────────────────────────────────────────────────────┘ │
│                                         │                                     │
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│              │ KT.2.3    Have discussion with key stakeholder                │ │
│              │ KT.2.3.1 Determine the time of conversation                  │ │
│              │ KT.2.3.2 Create a discussion forum                           │ │
│              │ KT.2.3.3 Make decision on the statement of vision, mission,  │ │
│              │          and objective of implementation ICT                 │ │
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│  ┌──────────────────────────────────────────────────────────────────────────┐│
│  │ Islamic values must be considered in the 2nd stage:                       ││
│  │    1.  Owning the monotheistic belief;                                    ││
│  │    2.  Glory can only be granted with God's permission;                   ││
│  │    3.  Life must have clear orientation and guidance to the future;       ││
│  │    4.  The honor and human dignity are equal before God, but their        ││
│  │        piety quality;                                                     ││
│  │    5.  Freedom to exchange views and accept others' opinions;             ││
│  │    6.  All decisions must be made collectively (jama'iy); and             ││
│  │    7.  As caliph, humankind's vision is to govern nature for collective   ││
│  │        well-being (mashlahah).                                            ││
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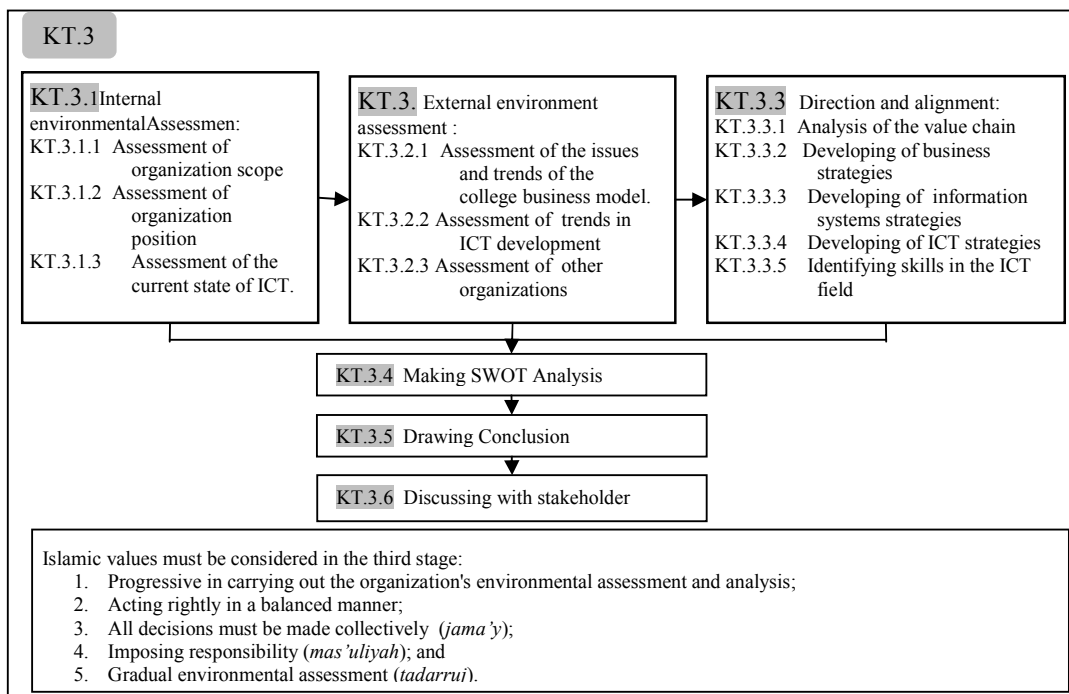**Figure 4:** IHE's ICTSP Activities in the Second Stage

The results of descriptive statistical analysis are presented in Table 3:

Table 3: Importance of the IHE's ICTSP Activities in the Second Stage

Stages	Activities	Importance
C.2 Determining the direction of ICT implementation (what)	C.2.1 Stakeholder Analysis	86.16%
	C.2.2 Formulate or reaffirm the vision, mission & objectives of the ICT implementation	95.51%
	C.2.3 Have discussion with key internal stakeholders	82.45%
	Average	88.04%

The results of measuring the importance of several activities in the second stage of the ICTSP process show that most respondents agreed that these activities are necessary. Determining the direction of utilizing ICT becomes the conceptual picture of the path and objectives to achieve in ICT-based higher education management, which are known as the vision and mission of the ICT. The vision and mission illustrate the benefits of ICT implementation for stakeholders.

3. *The IHE's ICTSP activities in the third stage (Assessment and analysis of organizational environment).*

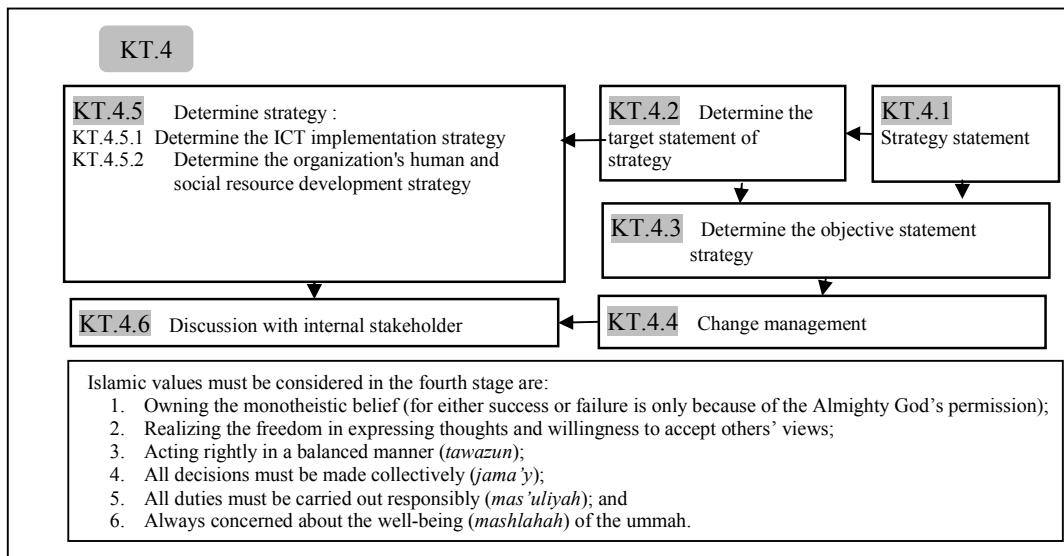**Figure 5:** IHE's ICTSP Activities in the Third Stage

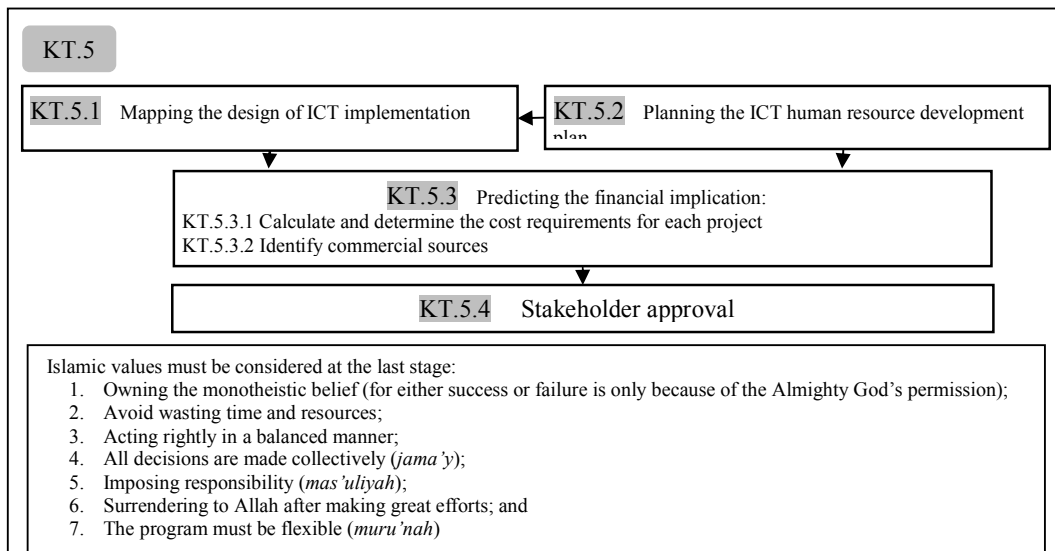The results of descriptive statistical analysis are presented in Table 4:

Table 4: Importance of the IHE's ICTSP Activities in the Third Stage

Stages	Activities	Importance
C.3 Assessment and analysis Organizational environment (*where*)	C.3.1 Internal Environmental Assessment:	84.22%
	C.3.2 External Environmental Assessment:	82.59%
	C.3.3 Direction and Alignment :	85.31%
	C.3.4 SWOT Analysis	94.29%
	C.3.5 Conclusion	89.80%
	C.3.6 Discussion with internal stakeholders	82.86%
	Average	86.51%

The results of measuring the importance of several activities in the third stage of the ICTSP process, showed that most respondents agreed that it was necessary. This stage aims to understand the background and physical conditions of IHE in Indonesia, which is to identify the strengths, weaknesses, opportunities, and threats in the ICT environment accurately. The results to be achieved in this third stage are a description of the facts that occur in the institutional environment related to the ICT utilization project plan at the ICT College and at the same time conducting a SWOT analysis.

4. *IHE's ICTSP activities in the fourth stage (ICT strategy formulation).*

Figure 6: IHE's ICTSP Activities in f the Fourth Stage

The result of descriptive statistic analysis are presented in Table 5:

Table 5: Importance of the IHE's ICTSP Activities in the Fourth Stage

Stages	Activities	Importance
C.4 ICT strategy formulation (*how*)	C.4.1 Make strategy statement	79.59%
	C.4.2 Determine the target statement of strategy	88.16%
	C.4.3 Determine the objective statement strategy	83.67%
	C.4.4 Change management	89.80%
	C.4.5 Determine strategy:	85.03%
	C.4.6 Have discussion with internal stakeholders	83.67%
	Average	85.01%

The results of measuring the importance of several activities in the fourth stage of the ICTSP process indicated that most respondents agreed that they are necessary. The formulation of the ICT strategy is intended to determine various alternative strategies for implementing ICT at IHE in Indonesia. It aims to achieve the vision, mission, and objectives of the ICT implementation that have been set, as well as to assess the risk of each alternative strategy. In the context of the IHE's ICTSP, the policy must consider two critical agendas, namely policies related to the success of ICT implementation systems and the development and welfare of human resources. The strategic decision must find the values of the stakeholders (*ummah*), health, and benefit, which is a social philosophy at IHE in Indonesia. The outcome of the ICT formulation is a set of ICT strategy decisions that must be achieved.

5. *IHE's ICTSP activities in the fifth stage (ICT implementation design)*

Figure 7: IHE's ICTSP Activities in the Fifth Stage

The result of descriptive statistic analysis are presented in Table 6:

Table 6: Importance of the IHE's ICTSP Activities in the Fifth Stage

Stages	Activities	Importance
C.5 ICT implementation design (When)	C.5.1 Mapping the design of ICT implementation	91.02%
	C.5.2 Planning the ICT human resources development plan	91.02%
	C.5.3 Prediting the financial implications	94.69%
	C.5.4 Stakeholders approval	95.92%
	Average	93.16%

The results of measuring the importance of several activities in the fifth stage of the ICTSP process as presented in Table 6. Most respondents agreed that these activities were necessary. This stage was intended to map various strategic actions in achieving ICT implementation. The outcome of this stage was to produce the roadmap document of ICT implementation. The roadmap describes the development of the program, calculates the investment needs and the use of the required budget and the making of procedures. Therefore, in the design of ICT implementation, there are actions to distribute programs, human resources, financial resources, and other resources.

The objectives of this stage are: (1) Mapping the overall programs needed to implement ICT; (2) Planning the total programs required for the human resource development strategy; and (3) Estimating the need for financial resources is necessary for ICT implementation and human resource development.

The stages and activities of the ICTSP comprehensive process in the ICTSP Framework are shown in Figure 8:
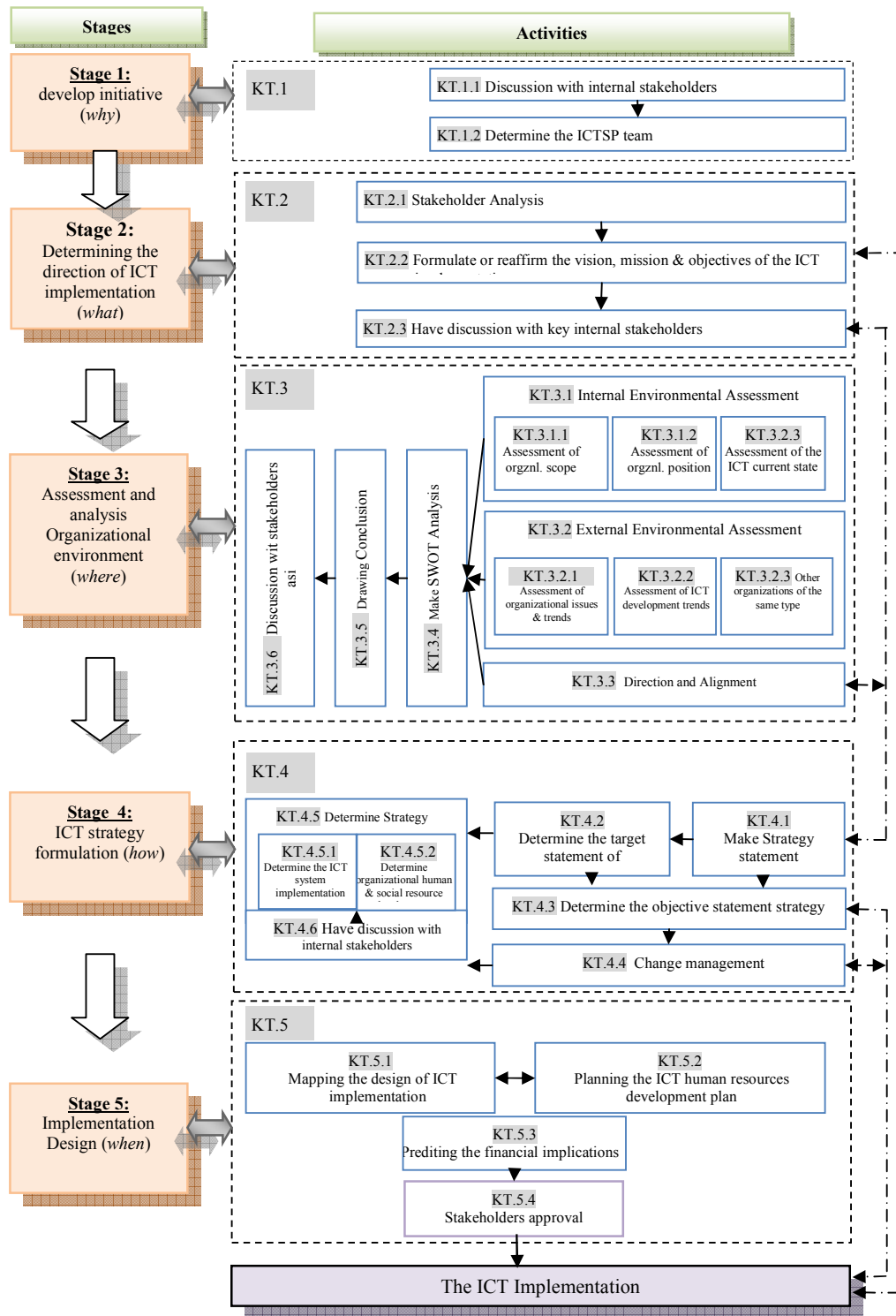
Figure 8: The IHE's ICTSP Framework

Hypothesis Testing

To ensure the effectiveness of the IHE's ICTSP framework as a guide to the ICTSP process in IHE in Indonesia, hypothesis testing is carried out by comparing the three ICTSP frameworks. The testing parameters include: (1) the effectiveness of the ICTSP process stages, (2) the completeness ICTSP

activities, (3) the effectiveness of the aims and objectives of the ICTSP activities, and (4) the effectiveness of the terms and meanings of the ICTSP activities.

Table 7: Wilcoxon Signed-Ranks Test Results

Null hypotheses		z	p
1.	There is no difference between the IHE's ICTSP and the MAMPU's ICTSP regarding the effectiveness of their ICTSP process stages.	-1.433	.152
2.	There is no difference between the IHE's ICTSP and the Boar's ICTSP regarding the effectiveness of their ICTSP process stages.	-1.722	.085
3.	There is no difference between the IHE's ICTSP and the MAMPU's ICTSP regarding the completeness of their ICTSP process stages.	-5.5797	.000
4.	There is no difference between the IHE's ICTSP and the Boar's ICTSP regarding the completeness of their ICTSP process stages.	-7.965	.000
5.	There is no difference with the background of IHE between the IHE's ICTSP and the MAMPU's ICTSP regarding the compatibility of their ICTSP activities with the background of IHE.	-2.340	.019
6.	There is no difference with the background of IHE between the IHE's ICTSP and the Boar's ICTSP regarding the compatibility of their ICTSP activities with the background of IHE.	-3.109	.002
7.	There is no difference between the IHE's ICTSP and the MAMPU's ICTSP regarding the effectiveness of the terms and meaning of their ICTSP activities.	-6.477	.000
8.	There is no difference between the IHE's ICTSP and the Boar's ICTSP regarding the effectiveness of the terms and meaning of their ICTSP activities.	-3.678	.000

Further explained as follows:

1. The effectiveness of ICTSP process stages.

    1. The difference between the IHE's ICTSP and the MAMPU's ICTSP regarding the effectiveness of ICTSP process stages.

    A Wilcoxon Signed-Ranks Test indicated that the IHE's ICTSP and the MAMPU's ICTSP have *Mdn=4.00*. Based on the results of statistical analysis (Z = -.433, p = .152) > .050), the decision is to accept the null hypothesis.

    2. The difference between the IHE's ICTSP and the Boar's ICTSP regarding the effectiveness of ICTSP process stages.

    A Wilcoxon Signed-Ranks Test indicated that the IHE's ICTSP and the Boar's ICTSP have *Mdn=4.00*. Based on the results of statistical analysis (Z=-1.722, p = .085 > .050), the decision is to accept the null hypothesis.

    Based on these analysis results, it is concluded that there is no difference between the IHE's ICTSP, MAMPU's ICTSP, and the Boar's ICTSP regarding the effectiveness of their ICTSP process stages. The MAMPU's ICTSP framework has four stages, Boar's ICTSP has three stages, and IHE's ICTSP has five stages, although the three ICTSP frameworks have different stages, the purpose of their ICTSP processes are the same as the blueprint output.

2. The completeness of ICTSP process stages.

    1. The difference between the IHE's ICTSP and the MAMPU's ICTSP regarding the completeness of ICTSP process stages.

    A Wilcoxon Signed-Ranks Test indicated that the IHE's ICTSP has *Mdn=4.00*, were statistically significantly higher than the median the MAMPU's ICTSP ranks, *Mdn=3.50*. Based on the results of statistical analysis (Z = -5.797, p = .000 < .050), the decision is to reject the null hypothesis.

    2. The difference between the IHE's ICTSP and the Boar's ICTSP regarding the completeness of ICTSP process stages.

A Wilcoxon Signed-Ranks Test indicated that the IHE's ICTSP has *Mdn=4.00*, were statistically significantly higher than the median the Boar's ICTSP ranks, *Mdn=3.50*. Based on the results of statistical analysis ($Z = -7.965$, $p = .000 < .050$), the decision is to reject the null hypothesis.

Based on these analysis results, it can be concluded that there is a difference between the IHE's ICTSP, MAMPU's ICTSP, and the Boar's ICTSP regarding the completeness of their ICTSP process stages. This difference is caused by; the first is the ICTSP process stage, the second is component completeness during the ICTSP process, and thirdly is the IHE's ICTSP framework contains Islamic values, which is that in line with the background of the IHE in Indonesia.

3. The compatibility with the background of IHE

   1. The difference between the IHE's ICTSP and the MAMPU's ICTSP regarding the background of IHE

A Wilcoxon Signed-Ranks Test indicated that the IHE's ICTSP have *Mdn=4.00* and the MAMPU's ICTSP have *Mdn=3,38*. Based on the results of statistical analysis ($Z = -2.34$, $p = .019 < .050$), the decision is to reject the null hypothesis.

   2. The difference between the IHE's ICTSP and the Boar's ICTSP regarding the background of IHE

A Wilcoxon Signed-Ranks Test indicated that the IHE's ICTSP have *Mdn=4.00* and the Boar's ICTSP have *Mdn=3,59*. Based on the results of statistical analysis ($Z = -3.11$, $p = .002 < .050$), the decision is to reject the null hypothesis.

Based on these analysis results, it can be concluded that there is a difference between the IHE's ICTSP, MAMPU's ICTSP, and the Boar's ICTSP regarding the compatibility of their ICTSP activities with the background of IHE. The goals and objectives cause this difference in formulating ICTSP. The MAMPU's ICTSP for public organizations in Malaysia, Boar's ICTSP for corporate organizations, and IHE's ICTSP for the IHE in Indonesia different backgrounds, values, culture, bureaucratic systems, ways of thinking, and politics in organizations.

4. The effectiveness of the terms and meaning of ICTSP process stages.

   1. The difference between the IHE's ICTSP and the MAMPU's ICTSP regarding the effectiveness of the terms and meaning of ICTSP process stages.

A Wilcoxon Signed-Ranks Test indicated that the IHE's ICTSP has *Mdn=4.00*, were significantly higher than the median the MAMPU's ICTSP ranks, *Mdn=3.00*. Based on the result of statistical analysis ($Z = -6.48$, $p = .000 < .050$), the decision is to reject the null hypothesis.

   2. The difference between the IHE's ICTSP and the Boar's ICTSP regarding the effectiveness of the terms and meaning of ICTSP process stages.

A Wilcoxon Signed-Ranks Test indicated that the IHE's ICTSP has *Mdn=4.00*, were significantly higher than the median the Boar's ICTSP ranks, *Mdn=3.50*. Based on the results of statistical analysis ($Z = -3.48$, $p = .000 < .050$), the decision is to reject the null hypothesis.

Based on these analysis results, it can be concluded that there is a difference between the IHE's ICTSP, MAMPU's ICTSP, and the Boar's ICTSP regarding the effectiveness of the terms and meaning of ICTSP process stages. This difference is due to the term and meaning in the ICTSP process component. The ICTSP process components of MAMPU's ICTSP and the Boar's ICTSP are not related to Islamic terms and values. Meanwhile, IHE's ICTSP framework component is in line with terms that are prevalent in Islam. It seems logical to argue that most Muslims are more pleased with the terms and values that are prevalent in Islam. Al-Attas (as cited in Wan Daud, 1998) stated that Islamic terms and values must enter the body of theory and frameworks since these theories and frameworks influence human behaviour and attitudes.

Discussion

Based on the results of the importance level of each component, the first to the fifth stages in the IHE's ICTSP framework show remarkably high percentages. These results mean that the activities designed into the IHE's ICTSP framework are essential as guidelines in implementing the ICTSP process in IHE in Indonesia. Raja (2003) suggests that the implementation of ICT in an organization needs a comprehensive understanding of the conditions of the organization. Gwo and Rong (2003) noted that the

success of ICT implementation relies on its ability to meet the existing social and human aspects in an organization.

The results of testing the null hypotheses on the differences among the IHE's ICTSP, the MAMPU's ICTSP, and the Boar's ICTSP frameworks show differences among these three ICTSP frameworks. These differences lie in the completeness of the ICTSP activities, compatibility during the ICTSP process, and the term and meanings of activities in the ICTSP process. Newkirk, Lederer, and Srinivasn (2003) stated that the completeness of the ingredients in the detailed stages of the ICTSP process contributed significantly to the success of its implementation. The objectives and background influence the current difference during the formulation of the ICTSP concept. The views, culture, and religion strongly influence an idea and philosophy that one holds that lead to the different methods applied by scientists (al-Attas as cited in Wan Daud, 1998). In the Islamic management context, the organizational *outcome* should concern about the values of humanity, welfare, and well-being (Azman, 2003; Ismail, 2000), because ICT is no more than a tool (Orlikawski & Iacono, 2001). As a tool, it provides a general view of what and how ICT is beneficial to humans (Orlikowski & Iacono, 2001). Hivos International Newsletter (2006) stated that when there is an investment in ICT, it is not only invested in the technological aspects but also in the development of human activities. It seems that MAMPU's ICTSP and Boar's ICTSP do not pass the assessment of these experts. It implies that MAMPU's ICTSP (MAMPU, 2003) and Boar's ICTSP (Boar, 2001) are not compatible if they are directly used as a guideline in implementing the ICTSP process in the State Islamic Universities in Indonesia due to the differences in culture, systems, bureaucracy, behaviour, human resources, and political. In using the ICTSP method in an organization, the approach should be under the organizational environment (Raja, 2003); when for example most people are Muslims, the Islamic values need to be incorporated directly into the ICTSP process (IDB, 2003).

Meanwhile, there is no difference between the three ICTSP frameworks in the effectiveness of the ICTSP process stages. In other words, the IHE's ICTSP, MAMPU's ICTSP and Boar's ICTSP, in terms of the regularity of the arrangement of the activities, have no difference. In the context of strategic planning theory, it is a systematic process to determine the direction of the organization in the future (Allison & Kaye, 2005), which includes the questions; Where are you? Where do you want to be? How do you get there? (Bryson, 2004). Cavalier (2002) also asserted that in carrying out the ICTSP process you should not forget the questions; why do you use ICT?, what do you want with ICT? and how can you achieve it?

Therefore, when designing the ICTSP framework, it must attend to social, human, system, values, culture, intentions and objectives, as well as terms that must be in line with the understanding and belief of the academic community in the IHE in Indonesia.

Conclusion

The main objective of this study is to develop an ICTSP framework that is in line with the system, culture, bureaucracy, politic, mindset, and Islamic values that apply in IHE in Indonesia (abbreviated as the IHE's ICTSP framework). The IHE's ICTSP framework is designed by adapting the MAMPU's ICTSP and Boar's ICTSP frameworks concerning systems, culture, bureaucracy, politics, mindsets, and Islamic values that are compatible with the IHE background. The MAMPU's ICTSP framework has 4 (four) main stages, namely: (1) business environment analysis (why); (2) ICT environment analysis (what); (3) ICT strategic development (how); and (4) ICT implementation plan (when). Meanwhile, Boar's ICTSP has 3 (three) main stages, namely: (1) the business environment analysis (what); (2) the strategic formulation (how); and (3) the strategic implementation (when).

Based on the results of the FGD, the IHE's ICTSP framework has 5 (five) main stages, namely: (1) develop initiative (why), (2) determine the of the ICT implementation direction (what), (3) Conduct an organizational assessment and environment analysis (where), (4) make ICT strategy formulation (how), and (5) make ICT implementation design. Each stage has several activities that are in line with changes in systems, culture, politics, mindsets, and Islamic values that must be used as a basis during the ICTSP process. The IHE's ICTSP framework is different from the MAMPU's ICTSP and Boar's ICTSP frameworks, in terms of completeness of activities, attention to the social welfare of the organization members, and the use of terms and meanings of activities in the ICTSP process that are in line with the IHE background which prioritizes values and Islamic culture. Thus, IHE's ICTSP framework is suitable as a guideline in the ICT implementation in the IHE in Indonesia.

References

[1] Al-Munawar, S. A. H. (2004). *Al-Qur'an membangun tradisi kesalehan hakiki*. 3rd Edition. Jakarta. Ciputat Press.

[2] Allison, M. & Kaye, J. (2005). *Perencanaan strategis bagi organisasi nirlaba*. Practical guidelines & workbooks. Translate. Jakarta: Yayasan Obor Indonesia.

[3] Al-Qardhawy, Y. (2003). *Wawasan Islam antara keaslian dan kemodenan*. 4th Edition. Fourth, Translator Hj. Ahmad Nuryadi Asmawi. Batu Caves Selangor Darul Ehsan: Thinker's Library Sdn. Bhd.

[4] Al-Qardhawy, Y. (1999). *Anatomi masyarakat Islam*. Translator. Setiawan Budi Utomo. Jakarta: Pustaka Al-Kautsar.

[5] Al-Quran and the translation

[6] An-Nabhani, T. (2006). *Daulah Islam*. Translator. Umar Faruq. HTI Team (Editor). Jakarta: Hizbut Tahrir Indonesia (HTI)-Press.

[7] Azman, C., O. (2003). *Manajemen di Malaysia dari perspektif Islam*. Kuala Lumpur: Dewan Bahasa dan Pustaka.

[8] Boar, B., H. (2001). *The art of strategic planning for information technology*. 2nd Edition. New York: John Wiley and Sons, Inc.

[9] Bryson, M., J. (2004). *Strategic planning for public and nonprofit organizations (A guide to strengthening and sustaining organization achievement)*. 3rd Edition. San Francisco: John Wiley & Sons.

[10] Cavalier, C., J. (2002). The forgottem question in information technology strategy planning. *Journal Planning for Higher Education*. September-November *31*(1), 4-14.

[11] Clarke, S. (2001). *Information systems strategic management: an integrated approach*. London: Routledge.

[12] Djamil, F. (1997). *Filsafat hukum Islam*. Jakarta: Logos Wacana Ilmu.

[13] Dwivedi, Y.K., Wastell, D., Laume, S., Henriksen, H.Z., Myers, M.D.,Bunker, D., Elbanna, A., Ravishankar, M.N. & Srivastava, S.C. (2015). Research on Information Systems Failures and Successes: Status Update and Future Directions. *Information Systems Frontiers*, *17* (1), 143-157.

[14] Ebad, S. A. (2018). An exploratory study of ICT projects failure in emerging markets. *Journal of Global Information Technology Management*, *21*(2), 139–160.

[15] Ewusi-Mensah, K. (2003). *Software development failures: anatomy of abandoned projects*. Cambridge, Massachusetts London, England. The MIT Press.

[16] Fenech, K. & Raffaele, D. (2013). Overcoming ICT project failures - A practical perspective. IEEE. https://www.researchgate.net/publication/261263057

[17] Fadillah, M. (2006). Kualiti kerja dalam organisasi: tinjauan dari perspektif manajemen Islam. Ab. Mumin Ab. Ghani & Fadilah Mansor (Editor.). *Dimensi manajemen Islam (mengurus kerja dan mengurus modal insan)*, Kuala Lumpur: Universitas Malaya: 1-21

[18] Fitzmaurice, M. (2000). Teknology strategic planning. Accessed in http://web.ukonline.co.uk/ mfitz/com-pro2.html

[19] Gwo, G.L. & Rong, J.B. (2003). Organizational mechanisms for succesful IS/IT strategic planning in the digital era. *Journal Management Decision*. *41*(1), 32-42.

[20] Hackney, R. & Little, S. (1999). Opportunistic strategy formulation for IS/IT planning. *European Journal of Information Systems*. *8*(1), 119-126.

[21] Hackney, R. & McBridge, N. (2002). Non implementation of an IS strategy within a UK hospital observations from a longitudinal case analysis. *Communication of the Association for Information Systems*. *8*(1), 130-140.

[22] Hartono, E., Albert. L., Lederer, V.S., & Youlong Z. (2003). Key predictors of the implementation of strategic information systems plans. *The Data Base for Advances in Information Systems. 34*(3), 41-53.

[23] Hevner, A.R. & Studnicki, J. (2000). Strategic information systems planning with box structures. Proceedings of the 33rd Hawaii International Conference on System Science 2000: 1-11.

[24] Hivos International Newsletter. (2006). *Penggunaan ICT dalam Organisasi Masyarakat Sipil*. July. *12*(2), 3-5. Accessed in http://slaksmi.wordpress.com

[25] IDB (Islamic Development Bank). (2003). *Guideline for a national IT strategy*. Jeddah: Islamic Research and Training Institute.

[26] Ismail, N. (2000). Kepimpinan Nabi Muhammad SAW (manajemen altrustik model ikutan sepanjang masa, perbandingan silang dengan kepimpinan dan manajemen semasa. Kuala Lumpur: Utusan Publications & Distributions Sdn. Bhd.

[27] Kurti, L., Baroli, E., & Sevrani, K. (2013). Critical Success Factors For Business – It Alignment: A Review of Current Research. *Romanian Economic and Business Review, 8*(3), 79-97.

[28] Madjid, A., A. (2000). Dirasah Islamiyah (metodologi studi Islam). Pasuruan. Garoeda Buana Indah.

[29] Madjid, N. (2000). *Islam doktrin dan peradaban: sebuah telaah kritis tentang masalah keimanan, kemanusiaan dan kemoderenan.* (4th ed). Jakarta: Yayasan Wakaf Paramadina.

[30] MAMPU. (2003). *Standars, policies and guidelines Malaysia public sector ICT strategis plan guide*.

[31] McNicol, S. (2005). The challenges of strategic planning in academic libraries. *New Library World*, *106*(11/12), 496–509. https://doi.org/10.1108/ 03074800510634982.

[32] McManus, J., & Harper, T. (2007). Understanding the Sources of Information Systems Project Failure. *Journal of Management Service*, *52*(3), 38-43.

[33] Microsoft, (2011). Governance Manual. Accessed in http://www.microsoft/brasil/ setorpublico/ governanca/pdti

[34] Mohd. Affandi, H. (1990). Pengurus dan manajemen dalam Islam. *Buletin Manajemen Islam*. *1*(1), 15-25.

[35] Mohd. Shahar, S. (1991). Manajemen organisasi dari perspektif Islam. Mohd Shahwahid Haji Othman (Editor). *Manajemen organisasi dari perspektif Islam*, Serdang: Persatuan Siswazah Islam Universitas Pertanian Malaysia (PERSIS): 1-32.

[36] Mohd. Sharifudin, K. (2004). *Analisis perencanaan strategik menurut perspektif Islam di sektor sosial, unit perencanaan ekonomi, suk negeri prak*. Working Paper. Pengajian Syariah Akademi Pengajian Islam Universitas Malaya. Kuala Lumpur: Universitas Malaya.

[37] Naceur, J. (1994). *Islam and management*. Kuala Lumpur: Institut Kajian Dasar (IKD).

[38] Newkirk, H.E., Lederer, A.L., & Srinivasan, C. (2003). Strategic information system planning: too little or too much?. *Journal of Strategic Information System. 12*(3), 201-228.

[39] Orlikowski, W.J. & Iacono, C. S. (2001). Desperately seeking the "IT" in IT research – a call to theorizing the IT artifact. *Information System Research*. Juni. *12*(2), 121-134.

[40] Raja, M. (2003). *Practical approach to ICT strategic planning*. Kuala Lumpur: Institut Tadbiran Awam Negara (INTAN).

[41] Silva, W. N., Vaz, M. A., & Souza, J. M. (2013). A Collaborative Model of Information Technology Strategic Plan for the Government Sector: *International Journal of Distributed Systems and Technologies*, *4*(4), 29–38. https://doi.org/10.4018/ijdst.2013100103.

[42] Sweis., R.J. (2017). An Investigation of Failure in Information Systems. Projects: The Case of Jordan. *Journal of Management Research. 7*(1), 173-185.

[43] Tahia, Al-Ismail. (2002). *Sejarah Nabi Muhammad SAW*. Translator. Siti Sujinah Sarnap. Johor Bahru: Perniagaan Jahabersa

[44] Teo, T.S.H. & Ang, J.S.K. (2000). How useful are strategic plans for information systems. *Behaviour and Information Technology*. *19*(4), 275-282.

[45] Tsiakkiros, A. & Pashlardis, P. (2002). Strategic planning and education: the case of Cyprus. *The International Journal of Educational Management*. *16*(1), 6-17.

[46] Wan Daud, W.,M., N. (1998). *Filsafat dan praktik pendidikan Islam Syed M. Naquib al-Attas*. Translator. Hamid Fahmy, M. Arifin Ismail & Iskandar Amel. Bandung: Mizan.

[47] Wan Liz, O., W., O. (1996). *Manajemen Islam abad ke-21 (revolusi manajemen untuk keunggulan sektor awam dan korporat)*. Kuala Lumpur: Utusan Publications & Distributors Sdn.Bhd.