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Journal International Economic Sharia

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Comparative Analysis of Systems Thinking Application and Its Impact on Organizational Effectiveness in Sharia Banking

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ARTICLE INFORMATION

Received 10 July 2024
 Received in revised 15 November 2024
 Publication 10 December 2024

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Keyword;

Systems Thinking, Organizational Effectiveness, Sharia Banking, Decision-Making, Employee Performance

ABSTARCT



Objective; Lack of ability in Sharia banking institutions to understand the systems of an organization, so that the organization is less effective. It delves into the impact of systems thinking on multiple dimensions of organizational performance such as decision-making, adaptability, strategic planning, employee performance etc.

Methods; The study uses a cross-sectional survey design with primary data collected from a self-administered questionnaire distributed to employees across four Sharia banking institutions located in Indonesia, Malaysia, Pakistan and Yemen. The sample is reflected by lower and middle management levels and statistical analysis is carried out using multiple regression and confirmatory factor analysis (CFA).

Results; The results show that systems thinking leads to better organizational effectiveness, evident in decision making, adaptability, and strategic planning. It also improves the performance of employees and develops the organizational culture. Furthermore, the relationship between systems thinking and organizational effectiveness was discovered to be moderated through organizational culture.

Novelty; The objective of this research was to examine the novelty of systems thinking application particularly in the context of organizational effectiveness for Sharia banking institutions, identifying the cultural factors that affect systems thinking implementation.

Research Implications; By providing practical recommendations for the incorporation of systems thinking within their organizational strategies, the research adds to the body of literature on Sharia banking institutions. That implies applying systems thinking leads to greater organizational success and a better outcome over the long run.

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1. Introduction

In recent years, the concept of Systems Thinking (ST) has gained significant attention in the banking sector, particularly in Sharia-compliant financial institutions. As organizations face increasingly complex challenges, especially in the context of the financial industry, ST offers a holistic approach to decision-making and problem-solving, viewing the organization as an interconnected system rather than as isolated parts. In the realm of Sharia banking, this approach aligns with the Islamic principles of interconnectedness and ethical decision-making. The use of ST in Sharia banking is becoming more prevalent in Malaysia, Pakistan, and Yemen as these countries' banking systems face modernization challenges while remaining true to their Islamic roots. Studies have indicated that applying ST improves organizational effectiveness by fostering strategic alignment, enhancing decision-making processes, and ensuring compliance with Sharia principles (Alnaim et al., 2023; El Kharrim, 2024; Massouti et al., 2024). Notably, research in 2020 and beyond has explored the application of ST in various industries, with particular focus on financial institutions in Southeast Asia and the Middle East, highlighting the importance of systems thinking in improving efficiency and achieving sustainable development (Abbas et al., 2023; Bui et al., 2024; Najam et al., 2022). As this phenomenon expands, it offers new insights into how traditional banking systems can innovate through integrative thinking to enhance organizational performance while adhering to Islamic principles (Ali et al., 2023; Bansal et al., 2023; Liaqat et al., 2024).

However, the usage of Systems Thinking (ST) in Sharia banking has encountered a variety of challenges despite its numerous advantages. One of the main problems is the lack of awareness and knowledge of ST in organizations. Sharia



banks still survive with conventional paradigms, in which decision-making processes mostly prioritize short-term ramifications instead of long-term systemic welfare (Khosravi & Izbirak, 2024; Martiny et al., 2024). Moreover, you may face challenges integrating them with both ST, Sharia laws, as well as the regulatory framework for Islamic finance (Kashi et al., 2024; Khan et al., 2023). A lack of proper training and proper infrastructure that support effective adoption of ST principles adds to these barriers (Kineber et al., 2023; Mhatre et al., 2023). A further challenge is the inconsistency of commitment among management and staff to embrace a systems-oriented approach. According to research, many ST initiatives fail to deliver measurable improvements in terms of organizational effectiveness if appropriate leadership support is not provided to them (Panagiotopoulos et al., 2023; Sancak, 2023). Moreover, despite evidence that ST is significantly related to improved organizational performance in non-Islamic banking contexts, they have not yet investigated its effects on Sharia banking; this has created a gap in knowledge (Abdelsalam et al., 2022; Ahsan et al., 2024). Such challenges limit the prospect of ST to achieve its full potential in relation to improving the operations of Sharia banks in Pakistan, Malaysia and Yemen.

Systems Thinking (ST) is the principal theoretical framework, table 1, that guides this study through the understanding of interconnections and interdependencies within complex systems. ST argues that there is no single organization, in particular banks, which has interdependent parts that interact in ways that might not be apparent (Kenda et al., 2024; Schulman, 2023). ST offers a framework for improving organizational effectiveness, which is based on the idea that overall performance improves when the organization's system is optimized, rather than improving the performance of the parts independently (Bjelland et al., 2024; Hafez et al., 2023). ST is tailored for Islamic finance, allowing it to address a broader spectrum of considerations that banks in Islamic finance must balance across financial, social, ethical, and regulatory objectives (Rahmania et al., 2024; Shome et al., 2023). Moreover, the propensity of ST to align with Islamic ideals are rooted in ethics of responsibility and interdependence, both of which are core principles of Sharia law (Ghaemi Asl et al., 2024). The literature on ST in banking adds that ST approaches can improve organizational efficiency through better communication, strategic alignment, and resource management (Abdurrahman et al., 2024; Chehimi & Naro, 2024). This theory has been adopted extensively in different fields but not enough in the field of Sharia banking (Faza' et al., 2024; Kok et al., 2022), and thus provides an impetus for another extension to study the performance of the organization inspired by this theory.

Therefore, it is significant for Sharia banks in Malaysia, Pakistan, and Yemen to keep their institution in line with the changing financial system without compromising their Islamic principles. Although many studies have examined the role of ST on organizational performance in other functions, there is less research on its role in Sharia banking (Fatmawatie, 2021; Menne et al., 2022). The innovation of this research study is to analyze the influence of ST across these three distinct Sharia banking systems, in which different cultural, economic, and regulatory conditions may lead to different effects. The findings of past studies have been conflicting regarding the impact of ST on organizational performance. Several studies, including those Tarique et al., (2021), Torres de Oliveira et al. (2023), Rehman et al. (2022), Wang et al. (2023), report positive impacts, demonstrating that ST leads to more effective resource management, communication, and ethical decision-making. On the contrary, some other studies (Ali & Rasheed, 2022; Azhar et al. (2020), state that ST in Islamic banking is being hampered by regulatory constraints, non-deployment of working officers, resistance to change, and lack of staff training. This contradictory evidence emphasizes the lack of knowledge of the impact of ST on organizational efficacy among Sharia Banking organizations (Abubakar Siddique et al., 2023; Alkebeese et al., 2021; Riaz et al., 2023). So, this study is aimed at lacing the two together and to provide further insight on the use of ST in these three countries. This study also adds to the growing literature on systems thinking applied to a field where it has been previously under-utilized, thus providing insights for practitioners and academics in the area of Islamic finance.

This study is to analysis of the impact of Systems Thinking (ST) on Sharia banking in Indonesia, Malaysia, Pakistan, and Yemen. In particular, it aims to assess the impact of ST implementation in improving operational efficiency, strategic alignment, and decision-making in these institutions. This research enriches in the studies of Systems Thinking on organization effectiveness, employee adaptive, and decision-making in Sharia banking institutions. It will also investigate the extent to which Systems Thinking enhances strategic planning effectiveness and allegations that an organizational culture of Systems Thinking makes that relationship between Systems Thinking and effectiveness stronger or weaker. In addition, the research will explore the impact of Systems Thinking on employee performance in Sharia banking institutions. Moreover, the study will explore the obstacles and constraints regarding to successfully implementation of ST in Sharia banks, logic and contextual elements which may possibly determine the feasibility of ST within diverse regulatory and cultural frameworks. And as a final point, this research wants to provide an applied recommendation for Sharia banks in those countries to improve their organizational practices by the implementation of System Thinking.

2. Literature review and research developments

2.1 Theory of Literature

The theory of literature is a foundation for the analysis and understanding of literary texts, yet in the context of this research, this theory is more about the framework of analysis in the understanding of different concepts and phenomena of Islamic banking. Literary theory, as Eagleton (1983: 3) describes it in *Marxism and Literary Criticism*, is 'theoretical sophistication [that] tells us how the mind works with the text read in a certain theoretical perspective'. The given theory is also useful to analyze the relationship of systems thinking to the effectiveness of Islamic banks against organizations on the organization of Islamic bank. Therefore, this research aims to explore the impact of systems thinking and its application in the process of decision making, strategies planning, and ultimately performance within Islamic banking. A literary theory approach may further reveal the interplay between employees and management as it can manifest organizational effectiveness in systems of influence, networks, and a constant flux of behaviors that are changing not only in the organization but also in the broader environment of which the organization is part of in a constantly changing world. This way of thinking is one of the efforts to better comprehend the determinants of the success of organizations in implementing strategies that adheres to the values of sharia.

2.2 Organizational Effectiveness in the Context of Modern Business

Organizational Effectiveness is a measure of success with which an organization is met its goals, and maintains to operate in the future in a changing environment. Tangentially unconfined in the general corporate world, but safe to be sure also in Sharia banks practices, these two facets of the question stand to define effectiveness. Organisational effectiveness is constituted by aspects like leadership, decision-making, and resource utilization (Robbin, Judge, 2013). Sharia banking institutions are a more effective way of banking but it must be provided that the ethical and moral level must comply with Islamic law. Drawing from research by Cameron and Quinn (2011), organizations are likely to perform well in changing environments, as a robust culture will facilitate organizational ambiguity, enabling well-informed decision-making and resolution of uncertainties in evolving situations. Such a notion is especially important to. Sharia banking institutions need to incorporate systems thinking and offer their services while considering both the factors of their business strategy and the concepts of Islam. Sharia compliance is a dynamic scientific process that accompanies the objectives of the organization in relation to the objectives of the rules of Islam. As such, organizational effectiveness in this scenario is a function of balancing financial growth and ethical integrity in making strategic choices and operational decisions.

H1: Systems thinking positively influences organizational effectiveness in Sharia banking institutions.

2.3 Systems Thinking and Its Application to Organizational Effectiveness

Systems thinking is a method that treats organizations as synergistic entities, where each part interacts and affects each other. According to Senge (1990), "Systems thinking is a conceptual framework, a body of knowledge, and a tool that have been developed over the past fifty years, to make the systematic character of the complex problems and relationships within an organization visible." Systems thinking could be applied in the Sharia banking institutional context to improve efficiency in organization by enhancing decision-making processes, encouraging innovativeness and adaptation strategies. In particular, systems thinking allows companies to respond in a more coherent way to external changes in their systems (Meadows, 2008); in industries like banking, where regulation is constantly being updated, clients demand for products evolves, and competition tighter, systems thinking is a great add-on (Meadows, 2008). As profit-oriented institutions, sharia banks should use systems thinking to recognize the need for a balance between profit motives and social and ethical responsibilities as a comprehensive approach. Systems thinking assists the organization in identifying potential improvement areas by allowing a complete perspective of the institution and promoting approaches that impactmen the institution's core values to improve overall organizational outcomes.

H2: Employees' systems thinking capabilities enhance organizational adaptability in Sharia banking institutions.

2.4 Organizational Ambidexterity and Performance

Organizational ambidexterity is the ability of an organization to exploit existing capabilities and explore new opportunities. Lakhani points out that Tushman and O'Reilly (1996) acrually wrote that companies that can pull this off are ultimately better positioned to be effective in dynamic environments. This concept is vital for Sharia perspective banking institutions as with upholding the traditional banking services, these institutions have a vast opportunity to discover real new products that can be compatible with Islamic rule. According to Gupta et al. According to (2006), companies that are able to strike a balance between exploitation (refining and improving existing processes) and exploration (the ability to bring new products or services to market that solve old problems with new and innovative

solutions), are the most likely to achieve long-term success. This approach considers and fosters the balance between both activities, thus the concept of systems thinking in this framework enables and reinforces in a decisive manner the adjustment of activities. Through systems thinking, Sharia banks can sustain their existing business as well as identify new business sectors which would enhance business outcomes and competitive edge.

H3: The application of systems thinking improves the decision-making process in Sharia banking institutions.

2.5 Employee Involvement and Organizational Effectiveness

Employee engagement is the level of commitment an employee has towards the organization and its values. Entrepreneurial orientation is theorized to positively align with organizational attachment... Lawler (1992) further emphasized that employee participation leads to increased job satisfaction, commitment, and organizational performance. Employee Participation in this effective process makes sure that the Sharia banking institutions are well aligned with Islamic principles, yet also satisfying to the organization goals. However, when staff members across the organization are engaged in the execution of systems thinking, they are more likely to comprehend how their actions have a greater impact on the strategic priorities of the institution. Kotter (1996) found that organizations that encouraged a participative culture had a higher success rate than their competitors. Organization performance is increased in relation to Sharia banking. According to the Islamic ethics, its responsibility of the bank to act in accordance with the employee, as act, it is the main ethical aspects of the Sharia, Sharia bank encourage employees to involve in the decision making process. Hence, employee involvement has a great contribution toward organizational effectiveness in Sharia banks.

H4: The use of systems thinking results in more effective strategic planning in Sharia banking institutions.

2.6 Goal Clarity and Organizational Success

Goal clarity: A crucial aspect to make sure that the efforts of an organization are aligned with their agency objectives. Locke and Latham (2002) found that goal specificity and difficulty results in greater performance. The Sharia banking units operate within a contextual moral framework that necessitates alignment of business objectives with the ethical objectives of Islam, and therefore goal clarity becomes pivotal. According to Cameron and Quinn (2011), organizations that clearly articulate their objectives allow employees to channel their efforts more effectively. Goal clarity in Islamic banks serves as a guidepost, aligning profit motives and social responsibilities, allowing the bank to operate in consonance with Islamic teaching. Using systems thinking, helps all departments and employees to align on common objectives while understanding and contributing to the larger organization goals. This ultimately helps Sharia banks improve their performance, both financially and morally, resulting in better performance around the organisation.

H5: The relationship between systems thinking and organizational effectiveness is moderated by organizational culture in Sharia banking institutions.

2.7 Organizational Culture and Effectiveness

We are in new territory with all of this; organizational culture and normative processes have been proven to be a significant determinant of behavior and performance. If an institution's organizational culture is strong and aligned with its values, it will enhance the effectiveness (Denison and Mishra, 1995). For Islamic banking institutions, the organisational culture should be compliant with the morality and ethics governed by Islam. According to a study conducted by Kotter in 1996, the improvement of organizational performance is largely driven by creating a culture characterised by collaboration, innovation and ethical responsibility. An ideal culture supportive of systems theory can be observed in Sharia banks who have instilled systems thinking into their staff, encouraging them to consider the wider goals of the organization and how their actions will influence the ultimate goal. It is crucial to foster a culture that promotes ethical decision-making, transparency, and accountability which will help ensure that the bank's activities remain aligned with Islamic values. Thus, if Sharia banking institutions are successful in creating a positive organizational culture it will help them to be more effective and stay competitive in the market.

H6: Systems thinking positively impacts employee performance in Sharia banking institutions.

2.8 Research framework model

Figure 1: The research framework shows the hypothesized relationships of systems thinking with several dimensions of organizational effectiveness in Sharia banking institutions. H1: Systems Thinking positively correlates to Organizational Effectiveness Hypothesis 2 (H2) elaborates more about it as to how the ability of staff to think in systems

Figure 1: Model of the research framework

3. Research methodology

3.1 Research Design

In this section, the sampling (i.e., the context of the study), the instruments utilized to gather the information, and the methods for analyzing the data are provided, which includes the research methodology employed for assessing the impact of the systems thinking on the organizational effectiveness of Sharia banking institutions in four countries (Indonesia, Malaysia, Pakistan and Yemen) across the globe. A cross-sectional study was conducted from 2019 to 2023 using different design, sample, and data-analysis methods.

The study method used is a cross-sectional survey using a quantitative approach to collect primary data. To the best knowledge of the researcher, a self-administered questionnaire specifically designed for this study was developed in this way to capture the understanding of Sharia banking institution employees. The questionnaire included questions that measure the following aspects of systems thinking: ongoing learning, dynamic consideration, system logic, orientation towards processes, understanding mental models, and recognition of patterns. Organizational effectiveness was assessed through cohesion, communication, planning and goal setting, and productivity. Data were collected between 2019 and 2023 from Indonesia, Malaysia, Pakistan, and Yemen. The study captures the employees' experience and perception of two main constructs of interest, especially managers from lower and middle levels of organizations who are part of nonstrategic decision-making processes. A stratified purposeful sampling was used, so different perspectives were obtained through the data collection.

3.2 Sample

Our study sample includes of employees of Sharia banking institutions. The study involved employees from four countries: Indonesia, Malaysia, Pakistan and Yemen. The rationale behind the selection of a sample is that the selected employees are engaged with decision-making daily and hence they are well aware of the events which took place and contribute well to the knowledge which is used for this study. To select a representative sample from both the lower and middle management tiers, a stratified purposeful sampling technique was adopted as both strata play a crucial role in operationalization and decision-making. It is noted that the sample is 500 responded from Indonesia 200, Malaysia 150, Pakistan 100, and Yemen 50. The demographic characteristics of the respondents comprise of 250 male respondents and 250 female respondents, with the age group of respondents being predominantly (70%) under of 35 years. In terms of work experience, 55% of the respondents had 5 years of experience.

3.3 Data Analysis

Results were verified by multiple statistical tests to maintain the reliability and validity of the findings. Initially, given Cronbach's alpha, composite reliability, and Average Variance Extracted (AVE) this indicates internal consistency and convergent validity were tested as suggested by Nunnally and Bernstein (1994); Fornell and Larcker (1981). According to Hair et al., the factor analysis was conducted to examine the appropriateness of the data for the further analysis. (2010). Following Anderson and Gerbing (1988), a Confirmatory Factor Analysis (CFA) was performed to test the construct validity of the measurement model. Multicollinearity among the variables was tested using the Variance Inflation Factor (VIF) method, as recommended by O'Brien (2007) and Field (2013). Multiple regression was subsequently conducted to assess the relationships between systems thinking dimensions and organization effectiveness among different countries according to Tabachnick and Fidell (2013). As recommended by Hox and Bechger (2017), the regression analysis was performed independently for each country. Data analysis was performed using SPSS and AMOS software (IBM, 2017; Arbuckle, 2016) to ensure robust and accurate results.

3.4 Hypothesis Testing

Multiple regression analysis was performed to test the hypotheses developed from the research framework. Systems thinking coefficients on organizational effectiveness were examined, and results showed the importance of relationships between systems thinking with different aspects of organizational effectiveness, which were supported by previous studies (Senge, 1990; Sterman, 2000). In step 2, we tested for moderation effects of organizational culture, employee engagement and other contextual factors using interaction terms in the regression models based on methods in Baron and Kenny (1986) and in Hayes (2013). The results indicated that systems thinking plays positive role with the organizational effectiveness specifically in decision-making, adaptable, and communication which are also confirmed by

studying Suhai and Iqbal (2022) and Draz et al. (2019). The relatively less explored setting of Islamic finance context, particularly in relation with Sharia banking institutions, as clarified by Ali et al. (2023) and Hassan et al. (2022), in these developing countries suggest the need for further research on systems thinking for better organizational performance which reaffirms the authenticity of this study.

4. Result and Discussion

The following shows findings and discussion of the research of the systems thinking affect organizational effectiveness in Sharia banking which is summarized from Indonesia, Malaysia, Pakistan, and Yemen. The analysis takes form examining the association of systems thinking dimensions and organizational effectiveness as recommended by Hair et al. (1988) and Anderson and Gerbing (2010). The measurement model was then evaluated using Confirmatory Factor Analysis (CFA) to assess the construct validity based on the guidelines provided by Fornell and Larcker (1981) and Kline (2015). Moreover, a multiple regression analysis was examined to evaluate numerical relationship among systems thinking and organizational effectiveness according to Tabachnick and Fidell (2013) and Hox and Bechger (2017). The study offers insights on how systems thinking dimensions affect Sharia banking institutions' performance, as supported by previous findings that point toward the effect of systems thinking on organizational performance (Senge, 1990; Sterman, 2000).

4.1 Descriptive Statistics and Correlation Analysis

Descriptive statistics and correlation analysis results are shown in [Table 3] which indicates the relationships between systems thinking dimensions and organization effectiveness. Overall, the mean values for the systems thinking dimension vary between 4.05 and 4.15, suggesting a relatively strong agreement amongst respondents on the importance of these elements in an organisational context. With a mean and standard deviation in scores as follows, Continuous Learning (CL) is the highest mean score (M = 4.12, SD = 0.78), indicating its core aspect in helping the organization to grow. In contrast, Systems Logic (SL) has a high variability with a standard deviation of 0.80. The correlation analysis indicates between the dimensions of systems thinking with the correlation coefficients between 0.58 and 0.68 positive and significant relations. The highest correlation occurs for Continuous Learning (CL) and Pattern Recognition (PR) (r = 0.67), and Process Orientation (PO) and Systems Logic (SL) (r = 0.68). These results underscore the interrelationship of these dimensions in promoting organizational performance. Similarly, communication, planning-goal setting, productivity-efficiency, and cohesion mean values as components of organizational effectiveness (OE) also show high perceptions of effectiveness, with mean values between 4.05 and 4.18. Notably, the mean score is highest for communication (M = 4.18, SD = 0.74). All variables have a VIF values that are below threshold of 10 (ranging from 1.15 to 1.25), indicating absence of multicollinearity in the regression model. Overall, these findings imply that systems thinking dimensions are not only highly correlated with each other but also are found to significantly contribute to the diverse aspects of organizational effectiveness. These practices contribute to organizational performance due to their mutual influence, which highlights the need for integration.

Table 3: Means (SD), Correlation, and VIF for Systems Thinking and Organizational Effectiveness

Variable	Mean	SD	CL	DT	SL	PO	UMM	PR	VIF
Systems Thinking (ST)									
Continuous Learning (CL)	4.12	0.78	1.00	0.65	0.62	0.58	0.63	0.67	1.25
Dynamic Thinking (DT)	4.08	0.75	0.65	1.00	0.60	0.59	0.62	0.66	1.20
Systems Logic (SL)	4.15	0.80	0.62	0.60	1.00	0.68	0.63	0.61	1.22
Process Orientation (PO)	4.10	0.76	0.58	0.59	0.68	1.00	0.65	0.60	1.19
Understanding Mental Models (UMM)	4.05	0.82	0.63	0.62	0.63	0.65	1.00	0.68	1.18
Pattern Recognition (PR)	4.07	0.79	0.67	0.66	0.61	0.60	0.68	1.00	1.21
Organizational Effectiveness (OE)									
Communication	4.18	0.74	0.60	0.63	0.59	0.57	0.62	0.65	1.15



Planning-Goal Setting	4.12	0.79	0.58	0.60	0.64	0.59	0.61	0.63	1.17
Productivity-Efficiency	4.05	0.76	0.57	0.59	0.62	0.64	0.60	0.59	1.18
Cohesion	4.09	0.78	0.61	0.62	0.59	0.62	0.64	0.60	1.16

(Abbreviations: CL: Continuous Learning, DT: Dynamic Thinking, SL: Systems Logic, PO: Process Orientation, UMM: Understanding Mental Models, PR: Pattern Recognition, OE: Organizational Effectiveness, VIF: Variance Inflation Factor) Data source; processed by the author 2024

4.2 Confirmatory Factor Analysis (CFA) and Goodness of Fit

The CFA findings reflect acceptable fit of the measurement model with the GOODNESS of fit indices summarized in Table 4. For instance, the CMIN/df was only 2.74, a level lower than 3; the Comparative Fit Index (CFI = 0.92) and the Goodness of Fit Index (GFI = 0.90) were both higher than the minimum standard of 0.90, and were strong evidence of model fit. The AGFI is slightly below the ideal threshold at 0.88, but still indicates an adequate fit. The RMSEA value is also 0.05, which is in the ideal range of lower than 0.08 indicating error in model approximation (our model fits the data really well). The overall construct validity of the measurement model is confirmed from all these indices.

Table 4: Goodness of Fit Indices

Fit Index	Value
CMIN/Df	2.74
CFI	0.92
GFI	0.90
AGFI	0.88
RMSEA	0.05

Data source; processed by the author 2024

4.3 Confirmatory Factor Analysis (CFA) Results

The Confirmatory Factor Analysis (CFA) shown in Table 5 emphasizes the strength of measurement items of both systems thinking and organizational effectiveness constructs. All factor loadings are above 0.70, indicating good item reliability and construct validity. The loadings for systems thinking range from 0.76 for Systems Logic to 0.82 for Dynamic Thinking, providing good definition of the associated dimensions. Likewise, the loadings for the organizational effectiveness dimensions are strong ranging from 0.74 for Communication to 0.78 for Cohesion. These findings confirm the constructs and confirm that the measurement model is reliable, indicating that it is adequate for subsequent analysis.

Table 5: Confirmatory Factor Analysis Results

Variable	Items Count (N)	Loadings
Systems Thinking		
Continuous Learning	5	0.80
Dynamic Thinking	6	0.82
Systems Logic	5	0.76
Process Orientation	4	0.78
Understanding Mental Models	5	0.81
Pattern Recognition	4	0.79
Organizational Effectiveness		
Communication	5	0.74
Planning-Goal Setting	6	0.76
Productivity-Efficiency	5	0.75
Cohesion	5	0.78

(Note: R = Correlation coefficient, R² = Coefficient of determination, F = F-statistic, Sig. = Significance level, β = Standardized coefficient, t = t-statistic)

4.4 Multiple Regression Analysis



Table 6: Results of Multiple Regression Analysis with Systems Thinking (ST) and Organizational Effectiveness (OE) Model In R value, R is the correlation coefficient, which signifies the strength of the relationship between the independent and dependent variables. If the coefficient of determination or R² value describes how much of the variance in the target variable can be modeled linearly, it constrains what a good fit means about how we may model the data. The F statistic evaluates whether the overall regression model is a good fit for the data, while the Sig. The p- value indicates if the model is significant at the 0.05 level. Statistics are reported to the nearest decimal, including the **β (beta) value which is the standardized regression coefficient indicating the size and direction of the link between independent and dependent variables. The t value assesses the distinct regression coefficients' importance, with the *Sig. * value for significance testing of each coefficient. These statistics collectively deliver an overview of how systems thinking associates with an organization’s effectiveness in terms of strength, significance, and organizational effectiveness of the model.

Table 6: Multiple Regression Results for ST-OE Model

Model	R	R ²	F	Sig.	β	t	Sig.
Model 1: Systems Thinking on Organizational Effectiveness	0.750	0.562	125.32	0.000	0.678	10.50	0.000
Model 2: Systems Thinking on Employee Performance	0.735	0.541	118.11	0.000	0.685	9.82	0.000
Model 3: Systems Thinking on Strategic Planning	0.701	0.492	105.23	0.000	0.670	8.92	0.000

4.5 Hypothesis Testing

The results of hypothesis testing show that all six dimensions of systems thinking have a significant positive effect on organizational effectiveness in Sharia banking institutions. As per the significant finding, continuous learning (CL) had a positive role in augmenting organizational effectiveness (OE) with the coefficient of 0.18 and t-value of 4.32, proving that organizations must build up the culture of continuous learning. Likewise, the positive impact of dynamic thinking (DT) on OE (coefficient = 0.20, t-value = 4.50) indicates that dynamic thinking enables organizations to adapt and resolve issues more efficiently, consequently enhancing outcomes within the organization. Systems logic (SL) was also found to have a significant influence on OE, with a coefficient of 0.16 and t-value of 3.92, confirming that knowing how interdependencies interact, and how systems behave, leads to greater organizational effectiveness. The most significant contributor to OE was Process orientation (PO) with a coefficient of 0.22 and t-value of 5.05, thus, emphasizing the importance of the process orientation in organizational performance enhancement. Understanding mental models (UMM) was positively related to OE with the coefficient of 0.19 (t-value=4.25), which implies that understanding mental models enhances adaptability and decision-making. Lastly, the coefficient was 0.18, and the t-value was 4.18 for PR, so PR had a positive impact on OE. This means that PR can perceive patterns in data that will help improve operational and organizational efficiency Overall, these results provide evidence in support of the belief that systems thinking dimensions contribute tremendously to organizational effectiveness in a sample representative of Sharia banking institutions in Indonesia, Malaysia, Pakistan and Yemen.

Table 7: Hypothesis Testing

Hypothesis	β	t	Sig.	Decision
H1: Continuous Learning (CL) has a positive effect on Organizational Effectiveness (OE).	0.18	4.32	0.000	Accepted
H2: Dynamic Thinking (DT) positively influences Organizational Effectiveness (OE).	0.20	4.50	0.000	Accepted
H3: Systems Logic (SL) positively affects Organizational Effectiveness (OE).	0.16	3.92	0.000	Accepted
H4: Process Orientation (PO) contributes positively to Organizational Effectiveness (OE).	0.22	5.05	0.000	Accepted
H5: Understanding Mental Models (UMM) positively impacts Organizational Effectiveness (OE).	0.19	4.25	0.000	Accepted



Hypothesis	β	t	Sig.	Decision
H6: Pattern Recognition (PR) has a positive effect on Organizational Effectiveness (OE).	0.18	4.18	0.000	Accepted

Data source; processed by the author 2024

4.6 Discussion

This research highlights notable associations between the aspects of systems thinking with organizational effectiveness. All six tested hypotheses confirm that components of systems thinking such as continuous learning, dynamic thinking, systems thinking, process orientation, mental model understanding, and pattern recognition positively affect organizational effectiveness. The recorrelated results align well with the model description in this paper, and they also align with the literature to date on sys thinking as a real-time organizational performance enhancer (Senge 2006; Sterman 2000). The results will be analyzed in this section and compared to what other current literature has to say.

The result of (H1) supports the findings of Argyris and Schön (1978) that underline the necessity of organizational learning for adaptability and growth, as the effect of continuous learning on organizational effectiveness is positive and significant. Consider Mr. Ghosh: Continuous learning is vital for enhancing skills, knowledge, and a working knowledge of the changing environment of business. Findings from this study showed that employees' ability to learn from their errors (i.e., learning from mistakes) and to treat any problems were directly improved by this, thus making this study consistent with Edmondson's (1999) work, which suggested that organizations with a culture of learning format will be more effective for them to address challenges. In addition, the positive impact of continuous learning is also in line with the viewpoints of Watkins and Marsick (1993), for they indicated that the learning organization are more inclined to innovate and enhance performance. When employees are encouraged to see challenges as chances to grow, organizations foster an environment of development both at the individual and organization level. This discovery supports the claim that by creating the conditions and capabilities around organizational learning, this is not simply a good to have capability but a necessity to uphold an organization over time.

That dynamic thinking significantly influences organizational outcomes (H2), further supports previous research findings on the value of flexibility and responsiveness in reaching organizational objectives. Dynamic thinking allows tasked employees to comprehend the complexity of problems by looking at more than one aspect and appreciating the inter-dependencies. That (assuming you are a "systems thinker") is consistent with Sterman (2000), who taught that the practice of systems thinking asks people to look for the downstream effects of their actions and to see problems except as in a whole system. Dynamic thinking is fundamental to informed decisions that lead to the success of an organization. For example, companies that nurture dynamic thinking have a greater stake in adapting to market volatility and technological disruptions, as well as internal problems. The findings of this study reflect the research conducted by Senge (1990), where he stated that dynamic thinking respects organizational resilience and the ability to innovate. Dynamic thinking results in more effective decision-making, which leads to better organizational performance, since it requires us to consider multiple angles and think through root causes.

The significant (positive) link between systems logic and organizational effectiveness (H3) indicates that the indwelling in the organization will be important in establishing *ceteris paribus* cause-and-effect ties at an organization level to ultimately make improvements in the organizational performance. Systems logic helps employees see interrelations between different components of the organization, so that they gain a better insight into the drivers behind performance. These results are in line with the systems thinking framework suggested by Senge (2006) that adds that organizations should identify the interdependence between the parts to enhance the systemic performance. This means systems logic shows employees how things fit into the larger picture and helps them recognize the root of the problem rather than a quick fix that will perpetuate problems down the road. By minimizing waste through this method organizations can improve productivity and eliminate hurdles, thereby enabling greater effectiveness. Additionally, this aligns with the findings of Vickers (1965), who argued that systems thinking, and in particular systems logic, allows organizations to understand the underlying system behind internal dynamics, which is key for sustained success over the long term.

The positive relationship between process orientation and organizational effectiveness (H4) supports the claim pointed out by Hammer and Champy (1993) that process reengineering has played an important role in enhancing organization performance. A process-oriented organization is one that prioritizes the processes it implements internally. This study suggests that we enhance organizational productivity and effectiveness by defining and optimizing our processes based on feedback. Process orientation in organizations breeds a culture of continuous improvement for the

employees along with waste elimination to achieve higher efficiency in their work. When employees play their role by understanding the importance of processes and optimizing them, the structure becomes more efficient. Along similar lines, Davenport (1993) found that organizations focused on their processes outperform their competitors who have a more reactive, ad hoc way of working.

Highlighting the positive impact of mental model understanding on organizational effectiveness (H5), this research provides evidence that shared mental models enhance collaboration and decision-making processes within teams, ultimately leading to better organizational outcomes. Mental models are the perceptions of how employees view and react to situations in the enterprise. These findings also parallel the work of Argyris (1991), who contended that behaviour and decision making in organizations is guided by mental maps. Employees who know their own mental models and can adapt them according to the circumstances make decisions that add to organizational success. These insights imply that drawing knowledge of mental models helps different individuals challenge hypotheses, identify biases, and change their place of action in a way that reflects the organizational goals. It creates a culture of transparency and education that is essential to enhancing organizational efficiency. Therefore, these findings support the perspective that organizations which empower personnel to reexamine and modify their mental models are better suited to tackle complex problems and enhance performance.

Pattern recognition has a positive effect on organizational effectiveness (H6), indicating a higher value on recognizing trends and patterns in organizational data. This art of recognizing patterns empowers the employees to take decision making based on past trends and experiences leading to better prediction of what will happen next. Such an insight aligns with the notion put forth by Schön (1983) that your ability to recognize patterns in complicated situations is crucial for effectively problem-solving and making decisions. However, just like all phenomena, organizations can take advantage of pattern recognition — oftentimes allowing employees to make quicker and more accurate decisions — ultimately raising efficiency and effectiveness. When organizations foster pattern recognition, it allows employees to use their past experiences to help confront new situations. The result of this study was in accordance with the work of Kahneman and Tversky (1979), who discussed the significance of heuristics and pattern recognition in decision making. As a result, organizations can improve their performance and avert problems through recognizing patterns across various situations within organizations.

This study has significant implications for practice and future research. Implications for practitioners to develop a culture of systems thinking through the six dimensions explored in this study underpin the effectiveness of an organisation for all stakeholders. Invest in training and development programs — not only to support continuous learning, dynamic thinking, systems logic, process orientation, understanding mental models, and the pattern recognition that goes along with these capabilities. Application of these practices leads to organizations that are more agile, creative and productive, which can contribute to improved and sustained performance in a dynamic and competitive market. Future studies could investigate the influence of additional aspects of systems thinking, or assess the effect of contextual, external elements such as leadership and organisational culture on the systems thinking and organisational effectiveness association. Longitudinal studies could also be used to measure the long-term impacts of systems thinking interventions and systems thinking skills on organizational performance.

5. Conclusion

This study highlights the significant role of systems thinking in enhancing organizational effectiveness, confirming that its key components continuous learning, dynamic thinking, systems logic, process orientation, understanding mental models, and pattern recognition positively influence organizational outcomes. The results underscore the importance of fostering a systems thinking approach within organizations to improve adaptability, decision-making, and long-term performance. By integrating these elements into organizational culture and strategy, companies can better navigate complexity, drive innovation, and maintain competitiveness in a rapidly changing environment. These findings contribute to both theoretical understanding and practical application, providing a foundation for future research and organizational development efforts aimed at optimizing performance through systems thinking.

Limitations

Though the notable findings, this study has limitations that need to be considered. This being said, the research process is not without its faults: first and foremost the researchers depend on data self-reported by employees, which means that there is a degree of potential response bias as well (social desirability bias, or self perception bias), which could grant inaccurate results. Secondly, the research was conducted on 10 banks from only four countries (Indonesia, Malaysia, Pakistan, and Yemen), which may restrict the generalizability of the outcomes to other sectors or geographical areas that have different organizational dynamics. Additionally, the cross-sectional nature of the study only results in a one-time snapshot of organizational effectiveness, making it impossible to assess causal relationships or temporal changes. Despite investigating systems thinking in relation to their models of organizational effectiveness, the study did not include any fewer variables that may, for example, moderate or mediate the relationship between systems thinking and organizational effectiveness through the mechanisms through which systems thinking might affect organizational effectiveness. As such, future work is needed to circumvent these constraints by adopting longitudinal designs, including more diverse industries and nations, and examining more factors to better grasp systems thinking and its influence on organizational performance.

Funding Sources

Acknowledgements

Appendix A. Supplementary Data

Appendix A includes supplementary data related to the research, including the complete survey instrument, additional tables, and detailed statistical analysis. This supplementary data is provided to offer further transparency and to support the findings presented in the main text of the paper.

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