

Centralization and complexity moderating the relationship between information quality and decision-making effectiveness: A study of banks in Palestine

Cite as: AIP Conference Proceedings 2016, 020084 (2018); <https://doi.org/10.1063/1.5055486>
Published Online: 27 September 2018

Zainon Mat Sharif, Mohanad S. S. Abumandil, and Tareq Fayeeg Obaid



View Online



Export Citation

ARTICLES YOU MAY BE INTERESTED IN

[The effect of eco- innovation on organization performance in Jordan industrial estates corporation](#)

AIP Conference Proceedings 2016, 020085 (2018); <https://doi.org/10.1063/1.5055487>

[A stability study on shelf life of mulberry juice in Malaysian SMEs' \(small medium enterprise\)](#)

AIP Conference Proceedings 2016, 020082 (2018); <https://doi.org/10.1063/1.5055484>

[A stability study on shelf life of spicy shrimp paste \(Sambal Belacan\) in Malaysian SMEs' \(small medium enterprise\)](#)

AIP Conference Proceedings 2016, 020083 (2018); <https://doi.org/10.1063/1.5055485>

Lock-in Amplifiers
up to 600 MHz



Centralization and Complexity Moderating the Relationship between Information Quality and Decision-Making Effectiveness: A Study of Banks in Palestine

Zainon Mat Sharif^{1,a)}, Mohanad S.S Abumandil^{2,b)} and Tareq Fayeq Obaid^{1,c)}

¹*College of Graduate Studies, Universiti Tenaga Nasional, Malaysia,
Putrajaya Campus, Jalan IKRAM-UNITEN, 43000 Kajang, Selangor, Malaysia*

²*Othman Yeop Abdullah Graduate School of Business, Universiti Utara Malaysia, Kedah, Malaysia.*

^{a)}Corresponding author: zainon@uniten.edu.my

^{b)}mohanad.mandel@gmail.com

^{c)}tareq-67@hotmail.com

Abstract. This study investigated the relationship of information quality on decision-making effectiveness among Palestinian bank managers. Previous studies reported on the importance of information quality on decision-making effectiveness in different fields of management. Organisational structure was reported to moderate information quality and decision-making effectiveness in different fields of management. However, the moderating effect of organisational structure on the relationship between information qualities on decision-making effectiveness had not been addressed in quality dimensions to decision making effectiveness in the banking sector of Palestine. This cross-sectional quantitative study examined the relationship between information quality and decision-making effectiveness as being moderated by organisational structure. A total of 146 surveyed managers were required to respond to 55 items that elicited the three variables. Information quality was represented by six dimensions, organisational structure by three dimensions, and decision making effectiveness by three dimensions. The data were analysed by SPSS and PLS-SEM. The findings showed the relevance and importance of information. The result revealed that four dimensions of information quality; namely, accuracy, completeness, relevancy and interpretability had a significant relationship with decision making effectiveness. Dimensions of organisational structure, namely centralization, significantly moderated the relationship between information quality and decision making effectiveness while complexity did not show a moderating effect. Overall, this study extends the understanding of the decision-making effectiveness. It contributes to building the model of the relationship between information quality and decision making effectiveness in the banking industry. These findings will benefit bank managers in Palestine to better understand the role of information quality and can utilise it towards developing sustainable banking services in Palestine.

Keywords: Decision-making effectiveness, information quality, organisational structure, banking sector.

INTRODUCTION

Every business and organizations need bank as their source of financing. Since, the managers as a key player for bank, they were responsible for decision making. In Palestine, banking sectors play an important role in the economic development [1]. The main challenges facing by Palestine banking sectors are internal factors and domestic imbalances which are related to the weak country's financial system [2].

The Israeli government controls the currency in Palestine; as a result, the development and growth of the banking sector in Palestine are hindered. Based on the statistics, the national banks of Palestine fared poorer than foreign banks almost at all levels, indicating that some measures need to be implemented to solve the poor performance of the national banks.

Making effective decisions is important towards the financial viability of the banks in Palestine. Without proper decisions and quality information, the decision would lead to the bankruptcy. Thus, it is crucial to carry out studies on decision effectiveness, specifically on the role of information quality and decision-making effectiveness in the banking sector. In order to be effective in making decisions, managers have to consider, assess, and evaluate several choices or alternatives. Thus, decision making is a systematic and incremental process that consists of recognizing, acting, and selecting alternatives by using the utility functions [3]. Making effective decision depends on the quality of information availability [4].

Managers are able to learn in manipulate successfully and manage complex causal systems [5]. This is because making a decision involves metacognitive processes that can allow individuals to exert cognitive control by enabling them to generate multiple, alternative decision frameworks that focus on interpreting, planning, and implementing goals [6].

Information is not a by-product, nor documentation, but it is a direct product of process used to capture knowledge about the persons, places, things, and events discovered while conducting business transactions [7]. When managers have the necessary information, they can make good decisions as information can be tabulated into diagrams which managers can interpret.

There is an indication to support the perception that good information can help lead an organization towards effective decision making [8]. However, it is hard to make right decisions without processed data or information in each activity and phase of the decision making. This is because of the increasing numbers of alternatives, time constraints, decision complications, the cost of making wrong decisions, and the need to access appropriate information. Hence, the value of information should be measured to determine if that information is useful to a particular organization [9].

Useful information improves decision making, enhances efficiency, and provides a competitive edge to the organization. The quality of the information circulated by several sources is a major problem encountered by information users [10]. This is because most of the information sources are not well-structured and, hence, they cannot be relied upon to get information with high-quality attributes [11]. The quality of information received can be measured against its attributes or dimensions accuracy, accessibility, relevancy, timeliness, completeness, interpretability.

Accuracy depends on how the data is collected and is usually judged by comparing several measurements, calculation, or specification from the same or different sources to the correct value or a standard [12]. Accessibility of information quality is connected with the problems of the medium of communication rather than the data itself. A poor or unavailable communication channel may lead to the problems of accessibility. Relevancy means that the data should have relevance to the task at hand [13]. It is argued that when data is relevant to the task at hand, this means that it is adequate for managers to make decisions [14]. Timeliness of information means the sooner the information is available to decision-makers; the faster it is for them to make decisions [15]. Completeness of the information can be defined as the extent to which data are of sufficient breadth, depth, and scope of the task at hand. This definition is task-centred and is derived from the intended use of the information for managers. Interpretability implies ease of understanding. In information quality perspective, interpretability is concerned with the interpretational semantic aspect. Based on the above arguments on the role of information quality, the following hypotheses were developed:

- H1a: Accuracy of information has a significant relationship with decision-making effectiveness.
- H1b: Accessibility of information has a significant relationship with decision-making effectiveness.
- H1c: Relevancy of information has a significant relationship with decision-making effectiveness.
- H1d: Timeliness of information has a significant relationship with decision-making effectiveness.
- H1e: Completeness of information has a significant relationship with decision-making effectiveness.
- H1f: Interpretability of information has a significant relationship with decision-making effectiveness

Organizational structure and decision-making effectiveness were connected to each other [16, 17]. Organizing implies decisions on tasks and responsibilities as well as the way of doing the tasks. Decisions are made via commanding hierarchy on complexity units or centralized units while the non-concentrated units or decentralized units' decisions are assigned to line managers as well as contributed by subordinates [18]. In a centralized organization, such as the banking sector, the lower ranking personnel make fewer decisions, and decisions are made through the use of established policies.

Centralization of the organization has been reviewed to effectively manipulate the way decision makers perceive information [19] by allowing managers to follow their own idea than other manager's idea. Such practice can significantly influence decision making, which some previous studies like [20] linked it to the extent to which an

organization promotes a cooperative conflict management style and comprehensive decision making based on information being shared among members within organization. Hence, the following hypotheses were purposed:

- H1a: Centralization significantly moderates the relationship between accuracy and DM.
- H1b: Centralization significantly moderates the relationship between accessibility and DM.
- H1c: Centralization significantly moderates the relationship between timeliness and DM.
- H1d: Centralization significantly moderates the relationship between completeness and DM.
- H1e: Centralization significantly moderates the relationship between relevancy and DM.
- H1f: Centralization significantly moderates the relationship between interpretability and DM.

The complexity of organizational systems can also play a key role in consolidating individual's decision which often reveals additional critical performance objectives [21]. Previous studies like [22] asserted the partial role of complexity to choice whereas others like [23] viewed complexity as the extent to which leader of an organization need to be highly adaptive and to adjust their behavioral responses to meet diverse role demands. The sense of adaptability however is manipulated by the quality of information upon which leaders having requisite complexity to facilitate effective decision making practices. Therefore, the researcher proposed the following hypotheses:

- H2a: Complexity significantly moderates the relationship between accuracy and DM.
- H2b: Complexity significantly moderates the relationship between accessibility and DM.
- H2c: Complexity significantly moderates the relationship between timeliness and DM.
- H2d: Complexity significantly moderates the relationship between completeness and DM.
- H2e: Complexity significantly moderates the relationship between relevancy and DM.
- H2f: Complexity significantly moderates the relationship between interpretability and DM.

METHODS

Decision-Making Effectiveness

Quality, commitment, and satisfaction were dimensions of decision-making effectiveness. Quality refers to the extent to which the decision maker is confident in his/her decision, and whether the decision is comprehensive, reliable and understood by subordinates. Four items were used to measure this dimension from various sources [24, 25]. Commitment refers to the extent to which a subordinate is committed to accepting the decision in order that it may be successfully implemented. Four items were used to measure this dimension. The items were taken from various sources [26, 27]. Satisfaction is defined as the extent to which the sum of one's feelings or attitudes toward the decision. Four items were used to measure this dimension from various sources [28, 29]. Six dimensions of information quality were examined. They were accuracy, accessibility, completeness, relevancy, timeliness, and interpretability. The accuracy dimension was measured by three items, accessibility by four items, completeness by four items, relevancy by four items, timeliness by four items, and interpretability by five items. All items were taken from various sources [30-33]. All items for decision-making effectiveness and information quality were measured on a five-point Likert scale, ranging from '1' "strongly disagree" to '5' "strongly agree." Personal information about the bank managers under study was also sought. It includes gender, age, level of education, and work experience.

Data Analysis

Data were analyzed by using partial least squares (PLS), which is good for both theory confirmation and exploratory research [34]. PLS involves two types of assessment: the measurement model and the structural model. The structural model's characteristic is measured by studying the R² determination coefficients and regression estimates and statistical significance. The R² value exemplifies an amount of prognostic power and shows the extent of divergence, justified by its antecedent variables in the model. The model's R² values should be high enough to reach a minimum level of explanatory power [35]. R² values of 0.67, 0.33, and 0.19 as significant, reasonable, and poor, respectively [36]. The path coefficient value measures how strong the link between two variables is. To indicate a certain influence, the path coefficients should exceed 0.1 within the model, and be substantive at the 0.05 level of significance at least.

RESULT

Profile of Participants

Based on the results, majority of the bank managers who participated in the study were male (90.4%). Close to half of them were less than 45 years old (43.8%). In terms of education, the majority had a bachelor's degree (84.2%), and most of them had been working in the bank for a long period of time between 10 and 20 years (99.0%), indicating that the sample had a fairly good experience in making decisions.

Assessment of the Measurement Model

The purpose of the measurement model analysis is to ensure the measures used are valid and that they adequately reflect the underlying theoretical components. The test of the measurement model includes the estimation of internal consistency (reliability) and component validity of the instrument items.

Cronbach's alpha determines the internal consistency or average correlation of items in a survey instrument to gauge its reliability [37]. Alpha coefficient ranges in value from 0 to 1. The higher the score, the more reliable the generated scale is. All constructs were found to have an acceptable reliability and scored well above 0.7 and ranged from 0.847 to 0.948.

Factor loadings, composite reliability and average variance extracted AVE was used to assess convergent validity [38]. All factor loadings for all items should be greater than 0.5 as the recommended level is 0.7 [39]. An item with loading less than 0.7 should be scrutinized to determine whether the item should be deleted or not to enhance the level of average variance extracted (AVE) [40]. In general, items with loadings of less than 0.5 should be dropped. Secondly, the composite reliability (CR) values of the components should exceed 0.70. Finally, the AVE values should be higher than 0.5. Table 1 show that all items met the validity requirements.

TABLE 1. Summary of Results of Measurement Model

Component	Item	Main Loading	Ave	Composite Reliability
Accuracy	Acc1	0.870	0.736	0.917
	Acc2	0.880		
	Acc3	0.898		
	Acc4	0.778		
Accessibility	Ab11	0.897	0.793	0.939
	Ab12	0.885		
	Ab13	0.899		
	Ab14	0.881		
Completeness	Com1	0.882	0.795	0.939
	Com2	0.885		
	Com3	0.904		
	Com4	0.895		
Relevancy	Rel1	0.887	0.777	0.933
	Rel2	0.853		
	Rel3	0.875		
	Rel4	0.911		
Timeliness	Tim1	0.877	0.686	0.897
	Tim2	0.793		
	Tim3	0.764		
	Tim4	0.874		
Interpretability	Int1	0.881	0.736	0.918
	Int2	0.793		
	Int3	0.866		
	Int4	0.888		
	Int5	0.780		
Satisfaction (Lower Order Construct)	Sat1	0.836	0.731	0.915
	Sat2	0.825		
	Sat3	0.925		

Component	Item	Main Loading	Ave	Composite Reliability
Quality (Lower Order Construct)	Sat4	0.829	0.606	0.860
	Qua1	0.717		
	Qua2	0.835		
	Qua3	0.714		
Commitment (Lower Order Construct)	Qua4	0.839	0.603	0.858
	Cmt1	0.720		
	Cmt2	0.836		
	Cmt3	0.730		
Decision Making (Higher Order Construct)	Cmt4	0.813	0.953	0.984
	Satisfaction	0.982		
	Quality	0.974		
	Commitment	0.972		

Assessment of the Structural Model

To examine the hypotheses, t-statistics were assessed for the standardized path coefficients by running bootstrap with 5000 re-samples. Four of the six relationships were significant. Accuracy, relevance, timeliness, and interpretability were found to be positively linked with decision-making effectiveness. Accessibility and completeness did not show any significant relationship. But, all dimensions of information quality were found to explain 83.7% of the variance in decision-making effectiveness. Figure 1 shows the result of the structural model assessment.

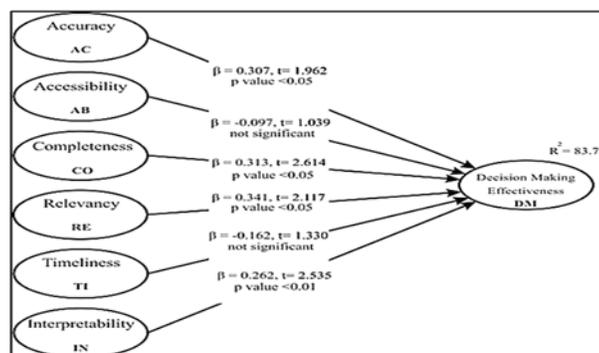


FIGURE 1. Result of Bootstrapping (t-values)

Statistical Results

The information quality dimensions that were found to be significantly related to decision-making effectiveness in banks were accuracy, completeness, relevancy, and interpretability. Therefore, bank managers should focus on these four aspects to improve decision making effectiveness. Further, based on the evidence of the certain significant moderating extent of centralization on the relationship between information quality dimensions and decision-making effectiveness, it is indicative that the structure of an organization is indeed important for effective decision making.

DISCUSSION AND CONCLUSION

The present study was carried out to examine the role of information quality characteristics (accuracy, accessibility, relevancy, timeliness, completeness, and interpretability) in decision-making effectiveness. Generally speaking, all these features were able to explain 83.7% variance in decision-making effectiveness. The collective influence of information quality characteristics found in this study corroborates the argument and past studies that information quality is key in making decisions toward achieving the organizational effectiveness [41].

However, upon a closer examination, of the six features, only four of them had significant individual effect on decision-making effectiveness. They were accuracy, relevancy, completeness, and interpretability. Such finding suggests that bank managers in Palestine require information that is accurate, relevant, complete, and interpretable when making decisions, implying that information quality features may be culture or context specific. Culture plays a critical role in decision making [42]. As Arab culture is characterized by high power distance, it is reasonable to speculate why accessibility and timeliness do not play a major role in managerial decision making. While such speculation may be valid, future research needs to be carried out to corroborate the cultural claim.

While the present study has offered valuable insight into the role of information quality on decision-making effectiveness, some caveats have to be considered. One of them is that this study was cross-sectional in nature; hence, drawing causal inferences may be problematic although it is likely that a good decision requires quality information. Secondly, the findings may have limited generalizability to other cultural contexts or research settings, which necessitate that future studies replicate the present research.

Information quality is inevitably an important pre-requisite for managerial decision making, especially when the decisions made can have far-reaching consequences for the organization. Hence, scrutinizing the information obtained and demanding that the information meets certain features are keys to sustainable organizational performance.

REFERENCES

1. Arnone, M., Laurens, B. J., Segalotto, J. F., & Sommer, M. (2009). Central bank autonomy: Lessons from global trends. *IMF Staff Papers*, 56(2), pp. 263-296.
2. Alkhatib, A., & Harsheh, M. (2012). Financial performance of Palestinian commercial banks. *International Journal of Business and Social Science*, 3(3), pp. 175-184.
3. Ehsani, M., Makui, A., & Nezhad, S. S. (2010). A methodology for analyzing decision networks, based on information theory. *European Journal of Operational Research*, 202(3), pp. 853-863.
4. Dean, James, W., & Sharfman, Mark P. (1996). Does decision process matter? A study of strategic decision-making effectiveness. *Academy of management journal*, 39 (2), pp. 368-392.
5. Hagmayer, Y., & Meder, B. (2013). Repeated causal decision making. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 39(1), p. 33.
6. Sharma, P. N., & Kirkman, B. L. (2015). Leveraging leaders a literature review and future lines of inquiry for empowering leadership research. *Group & Organization Management*, 40(2), pp. 193-237.
7. English, L. P. (2005). IQ and Muda; Information Quality Eliminates Waste. *Information Management*, 15(8), p. 40.
8. Buhalis, D., & Law, R. (2008). Progress in information technology and tourism management: 20 years on and 10 years after the Internet: The state of eTourism research. *Tourism management*, 29(4), pp. 609-623.
9. Vazifedoust, H., Nasiri, M., & Norouzi, A. (2012). Analyzing the relationship between organizational structure and employee empowerment in Eastern Azerbaijan. *Interdisciplinary Journal of Research in Business*, 2(6), pp. 10-24.
10. Naumann, Felix, & Rolker, Claudia. (2000). *Assessment methods for information quality criteria*.
11. Baars, H. and Kemper, H. (2008). Management support with structured and unstructured data-An integrated business intelligence framework. *Information Systems Management*, 25 (2), pp. 132-148.
12. Miller, H. (2005). Information quality and market share in electronic commerce. *Journal of Service Marketing*, 19(2), pp. 93-102.
13. Schaffer, U. (2008). *Timeliness of Information*. Management Accounting & Control Scales Handbook, pp. 287-288.
14. Dooley, R.S., & Fryxell, G.E. (1999). Attaining decision quality and commitment from dissent: The moderating effects of loyalty and competence in strategic decision-making teams. *Academy of Management journal*, 42(4), pp. 389-402.
15. Kushner, R.J., & Poole, P.P. (1996). Exploring structure-effectiveness relationships in nonprofit arts organizations. *Nonprofit Management and Leadership*, 7(2), pp. 119-136.
16. Soltani, A., Hewage, K., Reza, B., & Sadiq, R. (2015). Multiple stakeholders in multi-criteria decision-making in the context of municipal solid waste management: A review. *Waste Management*, 35, pp. 318-328.
17. Zabochnik, J. (2002). Centralized and decentralized decision making in organizations. *Journal of Labor Economics*, 20(1), pp. 1-22.

18. Shamim Khan, M., Ahmed, K., Gavazzi, A., Gohil, R., Thomas, L., Poulsen, J., Dasgupta, P. (2013). Development and implementation of centralized simulation training: Evaluation of feasibility, acceptability and construct validity. *BJU international*, 111(3), pp. 518-523.
19. Kasprzyk, J.R., Nataraj, S., Reed, P.M., & Lempert, R.J. (2013). Many objective robust decision making for complex environmental systems undergoing change. *Environmental Modelling & Software*, 42, pp. 55-71.
20. Ivancevich, Konopaske, & Matteson. (2008). *Organizational behavior and management (8th ed.)*. New York: McGraw-Hill Irwin.
21. Hannah, S.T., Balthazard, P.A., Waldman, D.A., Jennings, P.L., & Thatcher, R.W. (2013). The psychological and neurological bases of leader self-complexity and effects on adaptive decision-making. *Journal of Applied Psychology*, 98(3), p. 393.
22. Fisher, C.W. Chengular-Smith, I. and Ballou, D.P. (2003). The impact of experience and time on the use of data quality information in decision-making. *Information Systems Research*, 14(2), pp. 170-188.
23. Ives, B., Olson, M. H., & Baroudi, J. J. (1983). The measurement of user information satisfaction. *Communications of the ACM*, 26(10), pp. 785-793.
24. DeShon, R. P., & Landis, R. S. (1997). The dimensionality of the Hollenbeck, Williams, and Klein (1989) measure of goal commitment on complex tasks. *Organizational Behavior and Human Decision Processes*, 70(2), pp. 105-116.
25. Hollenbeck, J. R., Williams, C. R., & Klein, H. J. (1989). An empirical examination of the antecedents of commitment to difficult goals. *Journal of Applied Psychology*, 74(1), p. 18.
26. Lilien L., Rangaswamy A., Van Bruggen G. & Starke, K. (2004). DSS effectiveness in marketing resource allocation decisions. *Information Systems Research*, 15(3), pp. 216- 235.
27. Speier, C. (2006). The influence of information presentation formats on complex task decision-making performance. *International Journal of Human-Computer Studies*, 64(11), pp. 1115-1131.
28. Bovee, M. W. (2004). Information quality: A conceptual framework and empirical validation. Doctoral Dissertation
29. Grafe, G., & Werner, L. (2004). Context-based information retrieval for improved information quality in decision-making processes. Proceedings of the 4th International Conference on Knowledge Management, Graz, pp. 379-387.
30. Najjar, L. (2002). The impact of information quality and ergonomics on service quality in the banking industry. Unpublished doctoral dissertation. University of Nebraska, Lincoln, Nebraska, USA.
31. Slone, J. P. (2006). *Information quality strategy: An empirical investigation of the relationship between information quality improvements and organizational outcomes*: ProQuest.
32. Chin, W. W. (1998). Commentary: Issues and opinion on structural equation modeling.
33. Urbach, N., & Ahlemann, F. (2010). Structural equation modeling in information systems research using partial least squares. *Journal of Information Technology Theory and Application*, 11(2), pp. 5-40.
34. Santos, J. R. A. (1999). Cronbach's alpha: A tool for assessing the reliability of scales. *Journal of extension*, 37(2), pp. 1-5.
35. Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis*. New Jersey: Pearson Prentice Hall.
36. Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, pp. 39-50.
37. Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2013). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Thousand Oaks: Sage.
38. Hulland, J. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *Strategic management journal*, pp. 195-204.
39. Huner M., Ofner M. and Otto B. (2009). *Towards a maturity model for corporate data quality management*. SAC '09: Proceedings of the 2009 ACM symposium on Applied Computing, Honolulu, pp. 231-238.
40. Johnson, P. F., & Leenders, M. R. (2004). Implementing organizational change in supply towards decentralization. *Journal of Purchasing and Supply Management*, 10(4), pp. 191-200.
41. Ni, J., & Khazanchi, D. (2009). Information technology investment decisions under asymmetric information: A modified rational expectation model. *International Journal of Information Technology & Decision Making*, 8(01), pp. 55-72.
42. Rees, C. J., & Althakhri, R. (2008). Organizational change strategies in the Arab region: A review of critical factors. *Journal of Business Economics and Management*, 9(2), pp. 123-132.