The Impact of Marketing Information System Components on Organizational Decision Making: A Case of Jordanian Five Star Hotels

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ABSTRACT

An accurate decision is vital for an organization to survive in highly competitive marketplaces. The most critical factor contributing to the accuracy of decision making is the marketing information system (MIS). This study intended to determine the impact of MIS on decision making process among managers in five star hotels in Jordan. The study employed simple random sampling method to select 300 respondents from the sampling frame which consists of managers and decision makers of the hotels. The study sent out the self-administered questionnaires to the selected respondents to respond at their own convenient time. After a few weeks, a total of 230 responses were received and usable for analysis. The study employed the second generation method of analysis namely Structural Equation Modelling procedure in IBM-SPSS-AMOS 25.0 to model and test the hypotheses. The results showed MIS, which consists of marketing research, marketing record, marketing intelligence and decision support system has significant impact on decision making process. More importantly, it contributed about 97% of the decision making process in the five star hotels in Jordan. The testing of hypotheses for the MIS components found all components, except marketing research, has significant influence on management decision making among five star hotels in Jordan.

Keywords: Decision Making Process, Marketing Information System, Components, Five-star Hotels
JEL Classifications: M1, M31, M300

1. INTRODUCTION

The decision making process is imperative to ensure that protected, successful and exceptional services are endorsed for the market. Decision making process also empowers an exhaustive appraisal of dangers, advantages, and vulnerabilities and assembles trust in the administrative framework (Lembinen, 2018). Decision making process usually includes risks; since it is worried about the evaluation of future results; that none of which can be expected. Data decreases uncertainty and causes decision makers to view all the reasonable impacts of different choices, yet marketing information system (MIS) does not settle on the real decisions (Amin and Alrub, 2014). That means that any information processed by an organization whether negatively or positively, in a wrong or right way, at a wrong or right time will definitely impact the overall performance of an organization. MIS is composed appropriately to tackle numerous data issues confronting the Organization, like the wrong sort of data, in the wrong area, at the wrong time, and the lacking right kind of data, in the right area, at the ideal time (Lembinen, 2018). Moreover, Masum et al. (2018) indicated that MIS can furnish managers with convenient and exact information to permit making and applying the important choices to improve the inter-relationships most viably achieve the associations' objectives. The aim of this study is to investigate the comprehensive and detailed influence of Marketing Information System (MIS) on decision making process among five star hotels in Jordan.

2. METHODOLOGY AND DATA

This is a cross-sectional study where the data collection was carried at once throughout the research. Data were measured using multiple items in a questionnaire. The measuring items were adapted from previous studies and modified to suit the current study. The study employed the 10-point interval scale so as to meet the requirement for parametric statistical analysis (Awang, 2016; Bahkia et al., 2019; Asnawi et al., 2019). The content validity, face validity, and criterion validity of the instruments were verified by the respective experts during pre-test stage. After the pre-test stage is completed, the researcher amended the items according to comments and verification by the respective experts. Then using the refined items, the study moved into next stage namely the pilot study. Using the data from pilot study, the study employed the Exploratory Factor Analysis (EFA) procedure to assess the usefulness of every measuring items, their dimensionality and internal reliability for every construct (Shkeer and Awang, 2019). Once the EFA procedure is completed, the study rearranged the items accordingly for field study survey. The target population of this research is employees working at five stars hotels in Jordan. The researcher used the Jordanian Ministry of Tourism to get the sampling frame using the simple random sampling technique to select the random sample of respondents. The selected respondents were given self-administered questionnaire to attend at their own convenience time. Finally, using data from the field, the study conducted the Confirmatory Factor Analysis (CFA) procedure to validate the measurement model of every constructs for unidimensionality, validity and reliability (Afthanorhan et al., 2017, 2017a, 2018, 2019; Bahkia et al., 2019). Once the CFA procedure was completed, the study converted the research framework into the structural model and executed the Structural Equation Modeling (SEM) procedure to estimate the model and test the required hypotheses.

3. RESULTS

The respondents' characteristic such as age, gender, occupation, job description, and work experience are presented in Table 1.

The characteristics of the hotels involved in the study are presented in Table 2.

The research framework in Figure 1 shows an exogenous construct marketing information system (MIS) is a second-order construct measured using four first order constructs (components) namely, marketing research (14 items), marketing record (11 items), marketing intelligence (12 items) and decision support system (12 items). The endogenous construct in the model is decision making. This construct is a first order construct measured using seven items in a questionnaire. Every item is measured using an interval scale which ranges from 1 (strongly disagree) to 10 (strongly agree) with the given statement (Awang et al., 2016; Bahkia et al., 2019). Since the model is not very complicated, the assessment for both measurement models (constructs) is carried out simultaneously using Pooled-CFA (Figure 2) (Awang et al., 2015; Afthanorhan et al., 2017; 2017a; 2018; 2019; Asnawi et al., 2019).

Table 1: The respondents' characteristics

Respondent characteristics	Results (%)
Age	
<30 years	17.2
30<45 years	41.8
45<60 years	35.6
60 years and above	5.4
Gender	
Male	61.1
Female	38.9
Occupation	
Business administration	17.2
Tourism management	26.8
Hospitality management	36.4
Job description	
Deputy manager	13.4
Marketing and sales manager	23.0
HR manager	14.6
Front office managers	22.6
Work experience of respondents	Cumulatively, more than 85% have more than 5 years of experience which sounds good for our results

Table 2: Descriptive statistics for the hotels

Hotel characteristics	Results
Hotel location	
Amman	48.5%
Aqaba	20.9%
Petra	16.7%
Dead sea	13.8%
Number of employees	
<100	18.4
100–300	44.8
301–500	29.7
>500	7.1
Hotel services	
< years	13.4
5–10 years	42.7
>10 years	43.9

3.1. Assessment for Construct Validity

The assessment for construct validity was made using three categories of fitness indexes namely absolute fit, incremental fit, and parsimonious fit. The absolute fit category namely RMSEA is 0.078 (achieved the threshold of <0.08), the incremental fit category namely CFI is 0.911 (achieved the threshold of >0.90), and the parsimonious fit category namely the ratio of Chi square/df is 2.94 (achieved the threshold of <3.0). Thus, the measurement models for both latent constructs (marketing information system and decision making) have achieved the requirement for construct validity (Kashif et al., 2015; 2016; Noor et al., 2015; Yusof et al., 2017; Aziz et al., 2016; Azli et al., 2017).

3.2. Assessment for Convergent Validity and CR

For the assessment of convergent validity, the study needs to compute average variance extracted (AVE). The construct achieved convergent validity if its AVE exceeds the threshold value of 0.5 (Awang, 2015; Awang et al., 2018). As for assessing the CR, the study needs to compute the CR and its value should exceed the

Figure 1: The Pooled-confirmatory factor analysis to validate both measurement model at once
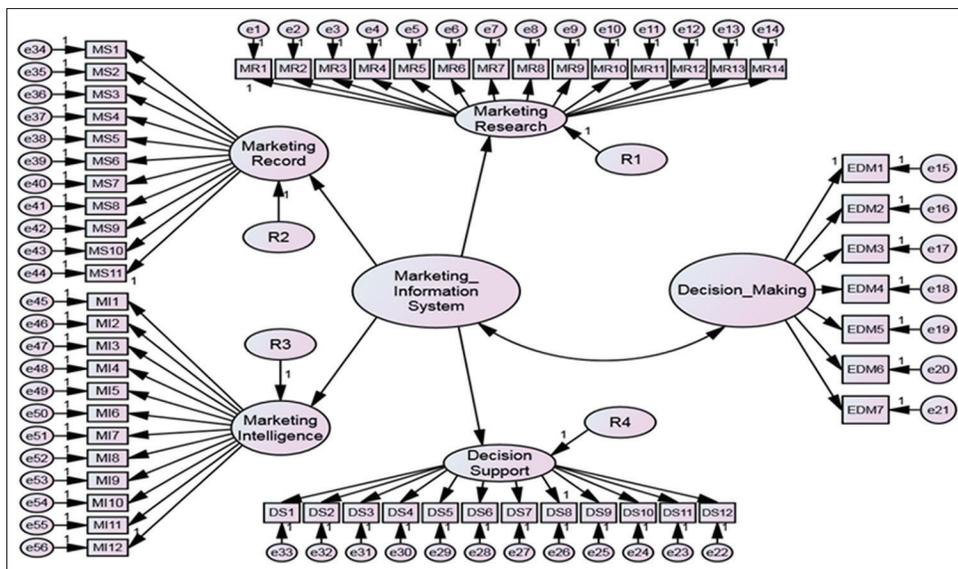
Table 3: The CR and AVE for marketing information system

Construct	Items	Factor loading	CR (above 0.6)	AVE (above 0.5)
Marketing information system	Marketing research	0.99	0.995	0.980
	Marketing record	0.98		
	Marketing intelligence	1.00		
	Decision support	0.99		

threshold value of 0.6 for this reliability to achieve (Awang et al., 2015; 2018). The AVE and CR for the main constructs Marketing Information System (MIS) which comprise four sub-constructs are evaluated in Table 3. The result obtained shows both AVE and CR has achieved the threshold values for convergent validity and CR.

Tables 4 and 5 show that both AVE and CR have achieved the threshold values for convergent validity and CR for MIS components sub-constructs.

The AVE and CR for the decision making constructs are presented in Table 6. The result shows both AVE and CR have achieved the threshold values for convergent validity and CR.

3.3. Assessment of Discriminant Validity among Constructs

The discriminant validity assessment is to ensure that no redundant constructs occur in the model. Redundant construct occurs when any pair of constructs in the model are highly correlated. For assessing the discriminant validity, one needs to develop the discriminant validity index summary, as shown in Table 7. The diagonal values in bold are the square root of the AVE of the respective constructs while other values are the correlation coefficient between the pair of the respective constructs.

Referring to Table 7, the discriminant validity for the respective construct is achieved if the square root of its AVE exceeds its correlation value with other constructs in the model (Awang, 2015; Awang et al., 2015; 2018; Mohamad et al., 2016; 2017; 2018; 2019; Afthanorhan et al., 2017; 2017a; 2018; 2019 and Asnawi et al., 2019). In other words, the discriminant validity is achieved

Table 4: The AVE and CR for marketing research and marketing record

Construct	Items	Factor Loading	CR (above 0.6)	AVE (above 0.5)
Marketing research	MR1	0.81	0.974	0.762
	MR2	0.82		
	MR3	0.86		
	MR4	0.87		
	MR5	0.88		
	MR6	0.88		
	MR7	0.84		
	MR8	0.87		
	MR9	0.84		
	MR10	0.99		
	MR11	0.98		
	MR12	0.81		
	MR13	0.89		
	MR14	0.91		
Marketing record	MS1	0.83	0.965	0.715
	MS2	0.83		
	MS3	0.83		
	MS4	0.83		
	MS5	0.83		
	MS6	0.83		
	MS7	0.91		
	MS8	0.84		
	MS9	0.79		
	MS10	0.85		
	MS11	0.92		

if the diagonal value (in bold) is more than any other values in its row and its column. The tabulated values in Table 7 meet the threshold of discriminant validity. Thus, the study concludes that the discriminant validity for the constructs is achieved.

Table 5: The AVE and CR for marketing intelligence and decision support

Construct	Items	Factor loading	CR (above 0.6)	AVE (above 0.5)
Marketing intelligence	MI1	0.83	0.975	0.763
	MI2	0.86		
	MI3	0.84		
	MI4	0.89		
	MI5	0.88		
	MI6	0.87		
	MI7	0.88		
	MI8	0.91		
	MI9	0.88		
	MI10	0.88		
	MI11	0.87		
	MI12	0.89		
Decision support system	DS1	0.83	0.968	0.718
	DS2	0.83		
	DS3	0.83		
	DS4	0.83		
	DS5	0.83		
	DS6	0.87		
	DS7	0.91		
	DS8	0.84		
	DS9	0.78		
	DS10	0.85		
	DS11	0.92		
	DS12	0.84		

Table 6: The AVE and CR for decision making construct

Construct	Items	Factor loading	CR (above 0.6)	AVE (above 0.5)
Decision making	EDM1	0.88	0.964	0.792
	EDM2	0.86		
	EDM3	0.89		
	EDM4	0.90		
	EDM5	0.89		
	EDM6	0.89		
	EDM7	0.92		

Table 7: The Discriminant validity index summary for all constructs

Construct	Marketing information system	Decision making
Marketing information system	0.98	
Decision making	0.74	0.87

Table 8: Testing the direct effect hypothesis

	Hypothesis statement	P	Result
H$_1$	Marketing information system (MIS) has significant effects on decision making among five star hotels in Jordan	0.001	Supported

3.4. Structural Model and Structural Equation Modeling (SEM)

Once the CFA report is completed and measurement models for all latent constructs involved in the model have been validated then, the next step for the researcher is to assemble these constructs into the structural model in order to execute SEM. Figure 3 shows MIS is an exogenous second order construct with four components (marketing research, marketing records, marketing intelligence and decision support) is linked to one endogenous first order construct measured using seven items.

The output resulted from executing SEM is given in Figure 4 for the standardized regression path coefficients between constructs.

The explanation regarding the performance of R^2 (coefficient of multiple determination) of the model (Figure 4) that marketing information system which is consist of marketing research, marketing record, marketing intelligence and decision support system significantly influenced decision making R^2 = 0.97, which infers that marketing information system which comprises marketing research, marketing record, marketing intelligence and decision support jointly accounted for about 97.0% of the variance observable in decision making.

3.5. Testing Hypotheses

The testing of the hypothesis statement for H1 is made in Table 8.

From Table 8, the marketing information system (MIS) has significant effect on decision making within 5-star hotels in Jordan since the probability value (P < 0.05).

In the above hypothesis (H$_1$), this research was able to establish that MIS as a construct has significant effects on decision making construct. Thus, the study wants to move further by testing the impact of every MIS component or first order construct namely; marketing research, marketing record, marketing intelligence and decision support on decision making. From Table 9, all the path coefficients of marketing record, marketing intelligence and decision support were significant because their P < 0.05 but marketing research was not significant. This implies that marketing record significantly influenced decision making with a coefficient of 2.05, P < 0.05, marketing intelligence significantly influenced decision making with a coefficient of 2.13, P < 0.05 and decision support significantly influenced decision making with a coefficient of 1.39, P < 0.05 while decision support was not significant. Also, the estimates of marketing record, marketing intelligence and decision support are positively significant with marketing intelligence having the highest coefficient of 2.13 followed by marketing record with 2.05.

Table 9: The text output present regression path coefficient and its significance

			Estimate	S.E.	C.R.	P	Result
Decision making	<---	Marketing research	0.36	0.512	0.698	0.485	Not significant
Decision making	<---	Marketing record	2.05	0.443	4.629	0.001	Significant
Decision making	<---	Marketing intelligence	2.13	0.755	2.014	0.012	Significant
Decision making	<---	Decision support	1.39	0.517	2.679	0.007	Significant

Figure 2: The results of pooled-confirmatory factor analysis procedure
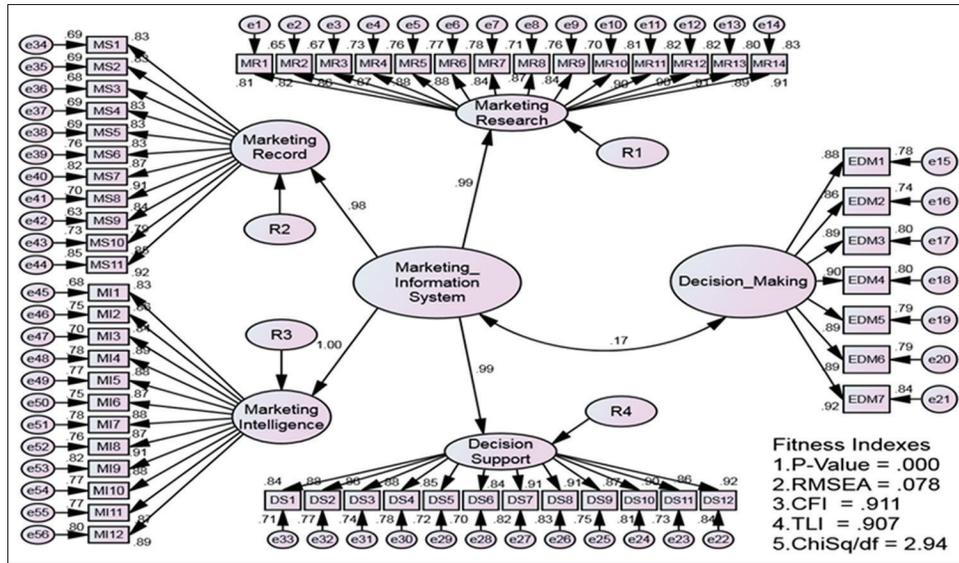
Figure 3: The structural model to estimate the effect of MIS on decision making
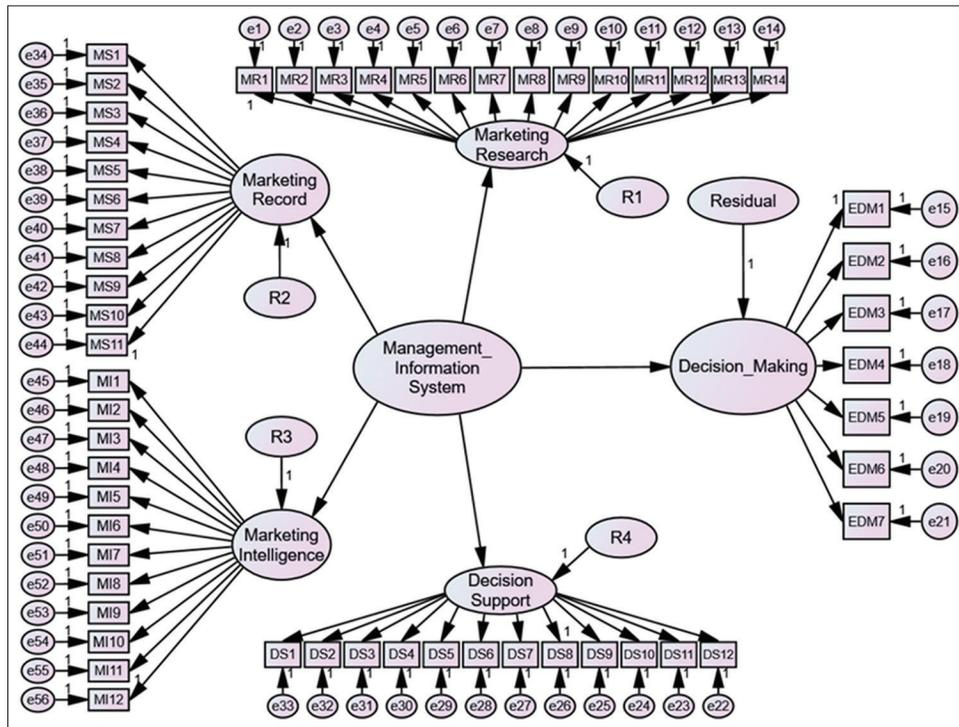
The testing of hypotheses for direct effect of every component on decision making is conducted in Table 10. The results in Table 10 further confirm the result of Table 9. It confirms that marketing record has significant effects on decision making among five star hotels in Jordan, marketing intelligence has significant impacts on decision making among five star hotels in Jordan and decision support system has significant effects on decision making among five star hotels in Jordan while marketing research has no significant effects on decision making among five star hotels in Jordan. From the four hypotheses, only three were supported while the hypothesis of the significant effect of marketing research on decision making among five star hotels in Jordan was not supported.

4. DISCUSSION

The result of the study shows that the majority of the respondents were male within the age category of 30-45 years. Also, many of the respondents specialized in Hospitality Management and Tourism Management with a high percentage working as marketing, sales manager and front office managers. In addition, almost 35% of the respondents had 11-15 years' work experience with almost 50% of the hotels involved located in Amman. The result of the first hypothesis shows that marketing information system has a significant effect on decision making among five star hotels in Jordan. Agwu et al. (2010) in their study on the effect of information system on management decision making, revealed

Figure 4: The standardized regression path coefficient between MIS and DM
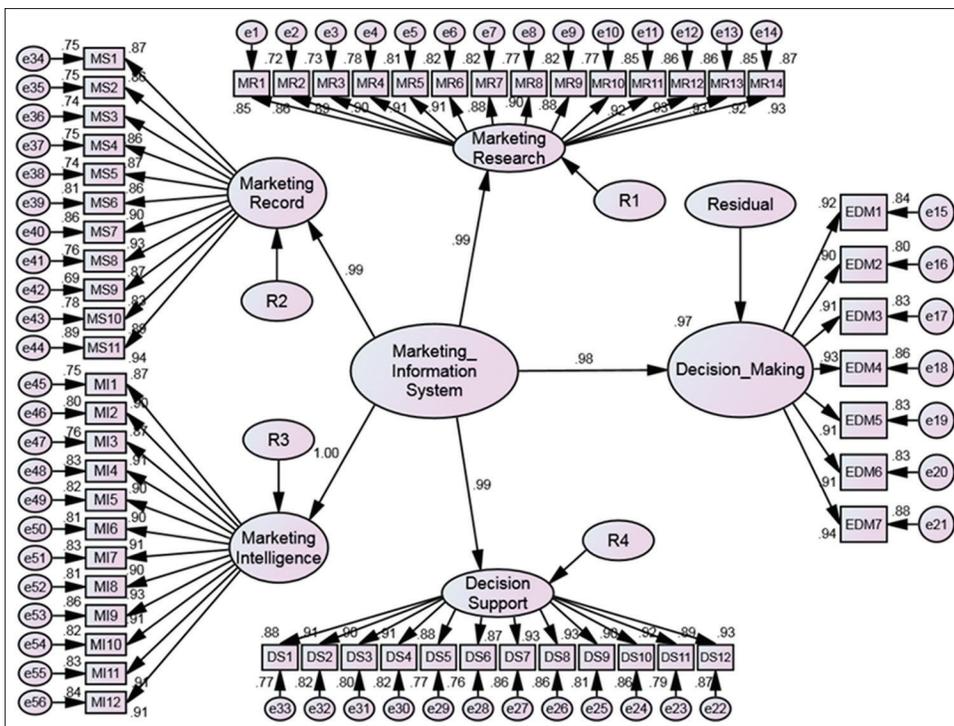
Table 10: The hypothesis testing for direct effect hypothesis

	Hypothesis statement	Result on hypothesis
H_{1a}	Marketing research has significant effects on decision making among five star hotels in Jordan	Not supported
H_{1b}	Marketing record has significant effects on decision making among five star hotels in Jordan	Supported
H_{1c}	Marketing intelligence has significant effects on decision making among five star hotels in Jordan	Supported
H_{1d}	Decision support system has significant effects on decision making among five star hotels in Jordan	Supported

that information systems have direct effect on decision making in an organization by influencing the manner and frequency through which information is delivered to key decision makers. Also, the result of the first hypothesis consolidates the study of Marchand et al. (2000), which established a positive correlation between the MIS and speed of problem identification. Merchand et al. (2000) maintained that roles of MIS are significant in forecasting marketing trends, shifts, competition and changes in both internal and external environment marketing forces. Marketing Information systems can produce useful and meaningful information for organizations that can be utilized for effective decision-making. The result of hypothesis 1b on the direct effect of the marketing record on decision making among five star hotels in Jordan shows that there was statistically significant effect of marketing records on decision making among five star hotels in Jordan. This shows that internal records significantly impacted decision making process. Fadzil et al. (2005) reported that effective internal records provide an independent appraisal of the quality of managerial performance in carrying out assigned responsibilities for better revenue generation, reduce chance of loss of revenue, and it also helps in meeting the organizational revenue target. Burns et al. (2014) stressed that the internal records are viewed as exact and fit with the reason that records are being utilized; additionally, the internal records contain up and coming data that assistance in settling on better decisions.

The result of the hypothesis 1a on the direct effect of the marketing research on decision making among five star hotels in Jordan shows that marketing research did not significantly impact decision making among five star hotels in Jordan. Ismaeel (2015) demonstrates that there was a moderate positive effect between marketing researches and the overall market share. Likewise, Ismail (2011) inferred that viable marketing research is a primary component of MIS that indicates positively marketing performance. The result of hypothesis 1c on the direct effect of the marketing intelligence on decision making among five star hotels in Jordan shows that there was statistically significant effect of marketing intelligence on decision making among five Star hotels in Jordan. This implies that marketing intelligence significantly impacts decision making in five star hotels in Jordan. This finding is in agreement with the study carried out by Freihat (2012) in which 56 marketing managers and marketing information system working staff were randomly selected from 7 companies. Just like the results of this research reveal, Freihat study reveals the relationship between the major components of marketing information system and the decision-making in Jordanian shareholding medicines production companies. Also, this study consolidates the study of Alhadid et al. (2015) on the relationship between marketing the information system and gaining competitive advantage in banks in Jordan.

The findings of the analysis revealed a relationship between the major components of marketing information systems such as internal records, marketing research, and marketing intelligence towards achieving a competitive advantage in the Jordan banking sector. The result of the hypothesis 1d on the direct effect of the decision support on decision making among five star hotels in Jordan shows that decision support was statistically significantly influenced by the decision making among five star hotels in Jordan. Also, this study also affirms the study of Al-Shaikh (2018) which established that marketing decision support system (MDSS) can investigate and analyze the data assembled from research, intelligence, and internal records. MDSS give rational findings when obtaining enough data; in addition, the various analysis that MDSS provides help with deciding the strength and weaknesses which prompt better decisions. Ismail (2011) and Bahloul (2011) found that MDSS is utilized by the banks and alternate firms and MDSS can dramatically affect the correct decision making and the workers' marketing performance in an organization.

5. CONCLUSION

Marketing information system is considered a vital instrument for an organization to survive in competitive marketplaces. The findings of this study show that the Marketing Information System significantly influences decision making among five star hotels in Jordan. Effective marketing information system helps indirectly developing and improving the work/service as a part of the product itself, or indirectly through increased responsiveness to the needs of the client. Organizations could benefit significantly from the analysis of customer data to determine their preferences to improve marketing support decisions. Marketing Information Systems are intended to support management decision making. Information systems have to be designed to meet the way in which managers tend to work. Therefore, this study concludes that Marketing Information System significantly affects decision making in five star hotels in Jordan. The study, therefore, concludes that any information got through marketing information system and processed by decision-makers in an organization, whether negatively or positively; in a wrong or right way; at a wrong or right time will have significant impacts on the overall performance of an organization.

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