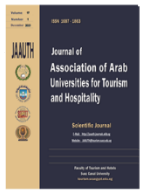

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Big Data Analytics' Utilization in Egyptian Hotels' Decision-Making: What are The Challenges of Applying BDA?

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ABSTRACT

Big Data Analytics (BDA) helps all kinds of organizations in both the public and private sectors to make better, faster, and more efficient decisions. Therefore, the research aims to explore BDA utilization in Egyptian hotels' decision-making. Moreover, to explore the difficulties those face managers of five stars' hotels and chains to apply BDA. This research developed all measurements using scales suggested by previous authors. The current research utilized the quantitative approach represented in a questionnaire. A five-point Likert scale was used to test the attitude of the hotel managers toward research variables. Participators shared in this survey are hotel' managers in hotel chains and five-star hotels in the governorates of Luxor, Aswan, the Red Sea, and Sharm El-Sheikh city. The research found that, hotels need to rationalize costs and create new opportunities, using BDA helps to increase the effectiveness, and making the right decision helps managers to achieve hotel goals. On the other hand, the challenges faced by hotels are the high cost of using BDA applications and the difficulty of security data. Furthermore, senior management should provide full financial support for the BDA application, which is considered beneficial in achieving hotel goals.

1. Introduction

Tourism is known as one of the industries with the largest use of information technology (IT) (Shkrepa and Kruja, 2021). Meanwhile, BDA is widely used in many fields such as engineering, healthcare, management, business, tourism, etc... (Amalina *et al.*, 2019) to achieve progress in these fields (Chiheb *et al.*, 2019). Besides, BDA helps all types of organizations in both public and private sectors to make better, quicker, and more efficient decisions based on evidence and insights (Barbero *et al.*, 2016). Hence, managers are looking for appropriate decision-making methods based on large volumes of data (Mahmoudi *et al.*, 2020). Thus, hotels look forward to finding an appropriate approach to make the right decision using BDA (Mahmoudi *et al.*, 2020).

In the literature, the authors found that there are relatively few studies that have tried to meet this challenge and integrate BDA into the decision-making process (Chiheb *et al.,* 2019). Furthermore, there is currently little research explicitly investigating the role of BDA in decision-making within the hotel industry (Manohar, 2020). From a strategic perspective, Hylving and Lindberg (2021), called for exploring the challenges of BDA. Therefore, this research aims to explore the impact of BDA on decision-making efficiency. Moreover, to explore the difficulties those face managers of five-star hotels and chains to apply BDA.

2. Literature review

2.1. Big Data Analytics

Big Data (BD) is defined as very large sets of data that are produced by people using the internet, which could not be controlled or examined through conventional databases (Lin *et al.,* 2019). Furthermore, BD is often defined by seven criteria, commonly referred to as 7Vs: Volume, Velocity, Variety, Veracity, Value, Variability, and Visualization (Faroukhi *et al.,* 2020).

On the other hand, BDA is a term, which is a combination of "BD" and "deep analysis". Every minute, a large amount of user data is being transferred from one device to another device, which needs high processing power to perform data mining for the extraction of useful information from the database (Amalina *et al.,* 2019). Moreover, BDA enables the rapid examination of data to significantly reduce costs and time and thus help in uncovering hidden patterns, unknown correlations, market trends, and other constructive information that can aid smart decision-making (Pani *et al.,* 2019).

2.2.Big Data Analytics' Utilization in the hospitality industry

The tourism industry, as an industry where customer experience is crucial for its growth and reputation, has mainly adapted to the evolving technology and the availability of new data sources. Most tourist services are now available on the Internet through online booking websites (Alaei *et al.,* 2019). Furthermore, the success of the organization not just lies in how good there are in doing their business but also in how well they can analyze their data and derive insights about their company, their competitors, etc... (Prasad, 2016). In this respect, hotels are looking for ways to harness the power of big data to improve their decision-making (Manohar, 2020). As a result, in the current business environments, BDA are seen as the next revolution in management, business, and competitive differentiation (Aaldering and Daniels, 2015). In this respect, big companies like Amazon, Google, eBay, UPS and so on are the best examples that show the potential of BDA (Ali and Siniak, 2020). **There are many uses of BDA in the hospitality sector, including the following:**

- Hotels offer highly competitive services and products, BDA has proven to be a necessity for digital marketing, so for each hotel to have the opportunity to distinguish itself (Ristova, 2019).
- BDA allows to find out exactly the parts of the product or service that are most valued by guests. Thus, achieving customer satisfaction (Ali, 2020).

- Achieving hotel growth and improving profitability need to develop and motivate employees. Hence, employee performance analytics search for assessing individual employee performance (Ali, 2020).
- BDA helps hotels to get more real-time information so that they can make efficient and more progressive pricing decisions (Gupta *et al.*, 2017).
- BDA can make a difference for the business intelligence of hotels, help them make better strategic and tactical decisions, and create value (Verhoef *et al.*, 2016).
- BDA plays a unique role in hotel revenue management through now providing daily, weekly, monthly and annual data for benchmarking and planning purposes (Ali & Siniak, 2020).

2.3. Decision-Making

Recently, decision-making is essential in different industries and has a major impact on the success of organizations (Mahmoudi *et al.*, 2020). In general, decision-making is the selection of actions from two or more alternative choices (Jordão *et al.*, 2020). Furthermore, decision-making is a process of making choices by setting objectives, gathering information, and assessing alternative choices (Sadeghzadeh, 2015).

2.4. The importance of decision-making in the hospitality industry

Decision-making plays an increasingly important role for the manager, whose cognitive competence is reflected in his/her ability to identify potential opportunities, to immediately detect and solve the problems he/she faces, and to predict and prevent future threats (Jordão *et al.*, 2020). Nonetheless, the importance of the decision is evidenced by its being the core of the administrative process that directs the planning, organizing, and controlling processes, and through it, the problem can be studied and the best solutions can be found (Hassan, 2019). According to Olmedo and Mateos (2015), in the tourism industry, the decision-making process is characterized by high complexity levels. This is due to the fact that tourism decision-making includes a high diversity of aspects, constant and rapid change, the impossibility of perfect knowledge due to imperfect information, and a substantial number of elements interrelated with each other (Pappas and Brown, 2020).

2.5. Using Big Data Analytics in Decision Making

Management typically needs to make decisions on multiple levels, such as strategic, tactical, operational, and even real-time (Noran and Bernus, 2018). Hence, the application of BDA in driving organizational decision-making has attracted much attention over the past few years (Björkman and Franco, 2017). Therefore, many organizations have started to invest heavily in developing and utilizing different tools and applications that provide a deeper understanding of data values buried within enormous unstructured datasets with the aim of improving decision-making processes (Gandomi and Haider, 2015), increasing customer loyalty and creating business value (Tiefenbacher and Olbrich, 2017).

BDA has the power to revolutionize traditional ways of doing business (Ali and Siniak, 2020). According to data scientists, decisions should be data-driven decisions

on the basis of evidence rather than intuitions (Raguseo, 2018). In order for BDA to achieve its full potential, it must be incorporated into the organization's strategy and decision-making (Björkman and Franco, 2017). Thus, its adoption covers advanced information processing techniques and technologies that improve the decision-making process (Raguseo, 2018). Furthermore, the facilitation of better decision-making is identified as one of the greatest benefits of BD (Tiefenbacher and Olbrich, 2017).

2.6. The challenges of Using Big Data Analytics in Decision Making

BD is the innovation engine driving new digital transformations of businesses. The proportion of firms implementing and utilizing BD, however, is not high (Peyne and Chan, 2017). According to the researchers, organizations remain reluctant to consume data analytics for strategic decision making (Manohar, 2020). Hence, the integration of big data analytics into the decision-making process within organizations remains a challenge (Ali and Siniak, 2020). Despite the importance of using BDA in the organizational decision process, there is limited research on the use of BDA for decision-making (Manohar, 2020).

Nevertheless, while BDA is generally considered as beneficial to business (Tiefenbacher and Olbrich, 2017), the literature that critiques BDA posits that there are extensively held ethical and privacy concerns about it (Faroukhi *et al.*, 2020), as well as concerns around security (Nunan and Di Domenico, 2013), extraction of relevant information from the wealth of data (Fulgoni, 2013), mistakes in interpretation and not least the risk of data breaches (Mayer Schonberger and Cukier, 2013). Besides, these concerns have been intensified by recent global cyber-attacks and more specifically by significant data breaches in a wide range of industries and sectors, including the tourism and hospitality industry (Armerding, 2018). Meanwhile, senior hotel managers report a low level of understanding about those systems capabilities, how it works, and what value this technology contributes (Rodrigues *et al.*, 2020). likewise, the biggest challenge lies in people and in their way of thinking, acting, and making decisions (Rodrigues *et al.*, 2020). Furthermore, even in businesses that use the most BDA, intuition still plays a decisive role in the decision-making process of managers (Peyne and Chan, 2017).

3. Methodology

The research utilized the quantitative approach to explore big data analytics' utilization in the Egyptian hotels' decision-making.

The questionnaire was designed depending on the literature and was developed according to the reviewers' comments and observations. The questionnaire was divided into two main parts. Part one is about personal data. The second part consists of 5 components such as **(1)** big data analytics in hotels (16 items), it was adapted and revised from previous researches (Aalderin and Daniels, 2015; Ali, 2020). **(2)** the efficiency of decision-making in hotels (6 items), a scale of (Roberto, 2013) was used to measure the efficiency of decision-making in hotels. **(3)** Attitudes and behaviors of managers towards big data in hotels (4 items), it was adapted and revised from previous researches (Al-Qirim *et al.*, 2017; Armerding, 2018). **(4)** Challenges of

applying big data analytics in hotels (9 items), it was adapted and revised from previous researches (Barbero *et al.*, 2016; Amalina *et al.*, 2019).

Furthermore, to determine the appropriate sample size of the hotels and hotel chains' managers in the study population, the researcher used the Robert Mason formula (shkeep, 2014) as follows:

$$n = \frac{M}{\left[\left(S^2 \times (M-1)\right) \div pq\right] + 1}$$

Where: **M**: population size (696). **n**: appropriate sample size (248). **S**: The value of the standard score corresponding to the significance level is 0.95, that is, dividing 1.96 by the error rate of 0.05 that equal 0.02551 **P**: sample proportion and neutral = 0.50 **q**: complement of sample proportion = 0.50

Applying these values to the Robert Mason formula reveals that the appropriate sample size for this research is 248 participants but the researcher distributed 280. After analysis, there were 29 questionnaires not valid for analysis; the valid is (251). The questionnaire was used to gather the primary data and was distributed to hotel' managers in hotel chains and five-star hotels in the governorates of Luxor, Aswan, the Red Sea, and Sharm El-Sheikh city.

Finally, Face validity: The scale was reviewed by 12 academic reviewers and 7 expert arbitrators from the hotel industry. Regarding reliability: The results showed that the alpha coefficient was 0.832 Therefore, these results were considered reliable.

Because all the scales were originally developed in English, the researchers converted these questionnaires into Arabic to ensure the competence of meaning. The five demographic variables included age, educational level, years of experience, department and hotel type. Of the participators, 73.7% are between 20 and 40 years old, 75.3% of managers are university qualifications, 67.3% have more than 10 years of experience and 61% of managers from hotel chains.

3.1 The Research Hypotheses

To achieve the main aim of this research as well as to address the specific objective, the study sets out to test these hypotheses:

H1: There are no statistically significant differences between independent hotels and hotel chains in terms of applying BDA at a significance level of 0.05

H2: There are no statistically significant correlation between years of experience and efficiency of decision-making in the hotel industry at a significance level of 0.05

H3: There is no statistically significant effect of perceived usefulness from applying BDA on the efficiency of decision-making in the hotel industry at a significance level of 0.05

H4: There is no statistically significant effect of attitudes and behaviors of managers towards BD on the easiness of applying BDA in hotels at a significance level of 0.05.

3.2 FINDINGS

3.2.1 VALIDITY AND RELIABILITY

The researchers put the main constructs of this research in a confirmatory factor analysis (CFA) to test the construct validity. All factor analysis scores ranged between 0.602 and 0.817 where it is bigger than 0.6 (Basheer, 2003). Hence, it is statistically acceptable. Except tow phrases "I always make a decision based on accurate, logical and previously analyzed data" and "I always look forward to a high level of achievement and innovation when carrying out hotel work." Then the researchers removed them. Cronbach's α values of all variables of the research exceed 0.71, supporting enough measurement reliability, Where Hair *et al.* (2010) contends that, Cronbach's α value greater than 0.7 is good for reliability.

3.2.2 DESCRIPTIVE STATISTICS

3.2.2.1 Big Data Analytics in Hotels

Table 1

Descriptive statistics for big data analytics in hotels Variable

Code	The Axis	M	SD	Rank
Drivers For Applying BDA in Hotels				
BDA111	The hotel deals daily with huge amounts of data that need to be analyzed.	4.23	.69	2
BDA112	Because of the fierce competition in the hotel today's business environment, the hotel adopts the latest information technology to help him to gain a competitive advantage.	4.36	.62	1
BDA113	The hotel needs to rationalize costs and create new opportunities that increase its revenues.	4.07	1.13	3
BDA114	The hotel needs to make efficient and up-to-date pricing decisions.	4.01	1.01	5
BDA115	The hotel needs, to foresee crises and how to deal with them.	4.00	1.11	6
BDA116	The hotel needs to make better, faster and more efficient decisions based on the evidence.	4.03	1.17	4
Easiness Of Applying BDA in Hotels				
BDA121	The hotel provides the necessary infrastructure and technology to use big data analytics.	3.70	1.30	2
BDA122	The hotel provides the necessary funding for the use of big data analytics.	3.66	1.29	3
BDA123	The hotel can recruit and retain qualified people.	3.64	1.35	4
BDA124	The hotel provides the necessary training for employees to perform their work efficiently.	3.51	1.50	5
Code	**The Axis**	**M**	**SD**	**Rank**
BDA125	The data collected from its sources are analyzed when making decisions regarding each department.	3.90	.77	1

Continued

Perceived Usefulness from Applying BDA in Hotels				
BDA131	The use of big data analytics helps to increase the effectiveness and efficiency of hotel workers.	4.19	.70	5
BDA132	Big data analytics helps identify guest needs and meet their expectations.	4.22	.60	4
BDA133	Big data analytics contributes to improving the hotel's production.	4.27	.72	2
BDA134	Big data analytics contributes to increasing hotel occupancy.	4.25	.70	3
BDA135	The use of big data analytics helps in increasing the efficiency of hotel performance.	4.35	.73	1
Total		**4.02**	**.44**	

M=Mean **SD=**Standard Deviation

3.2.2.1.1The sub variable "Drivers for Applying BDA in Hotels": The statistical analysis results in the above table indicated that "**BDA112**" comes at a first rank (M= 4.36, *SD*= 0.62). Followed by "**BDA111**" (M= 4.23, *SD*= 0.69). Furthermore, "**BDA113**" comes at a third rank (M= 4.07, *SD*= 1.13), this result agreed with Al-Qirim *et al.* (2017) who emphasized that BDA adoption enhances productivity. "**BDA115**" is ranked last variable (M= 4.00, *SD*= 1.11).

3.2.2.1.2 The sub variable "Easiness of Applying BDA in Hotels": Based on the previous table, "**BDA125**" comes at a first rank (M= 3.90, *SD*= 0.77), this result disagreed with Peyne and Chan (2017) who assured that intuition still plays a decisive role in the decision-making process of managers. Followed by "**BDA121**" (M= 3.70, *SD*= 1.30). Moreover, "**BDA124**" is ranked last variable (M= 3.51, *SD*= 1.50).

3.2.2.1.3 The sub variable " Perceived Usefulness from Applying BDA in Hotels": From the previous table, "**BDA135**" comes at a first rank (M= 4.3506, *SD*= 0.73525), this result agreed with Aaldering and Daniels (2015) where they assured that BDA can lead to increase the overall performance of the organiztion. Followed by "**BDA133**" (M= 4.2749, *SD*= 0.72120). Moreover, "**BDA131**" is ranked last variable (M= 4.1912, *SD*= 0.70092). It is noteworthy to mention, the statistical analysis results in the table 3.2 indicated that the total mean of BDA in hotels was (4.02) with a standard deviation of (0. 44), which indicated a high degree of agreement for all BDA in hotels phrases which means that this variable has a high level at hotels.

3.2.2.2 The Efficiency of Decision-Making in Hotels

Table 2

Descriptive statistics for the efficiency of decision-making in hotels variable

Code	The Axis	M	SD	Rank
Decision1	Rely on the best information available at the hotel when making a decision.	4.32	2.01	3
Decision3	Before making a decision, I do the following steps: identifying the problem, collecting data, analyzing the data, and then making a decision.	4.34	.71	2

Continued

Code	The Axis	M	SD	Rank
Decision4	Major decisions are made on time at the hotel.	4.28	.77	5
Decision5	I follow the results of the decisions taken in the hotel.	4.31	.72	4
Decision6	Making the right decision helps me achieve the hotel's goals.	4.38	.72	1
Total		**4.33**	**0.61**	

M=Mean **SD=**Standard Deviation

Based on the previous table, "**Decision6**" comes at a first rank (M= 4.3825, *SD*= 0.72). Followed by "**Decision3**" (M= 4.34, *SD*= 0.71). Moreover, "**Decision1**" comes at a third rank (M= 4.32, *SD*= 2.01). Furthermore, "**Decision5**" comes at a fourth rank (M= 4.31, *SD*= 0.72). In turn, " **Decision4**" is ranked last variable (M= 4.28, *SD*= 0.77).

It is noteworthy to mention, the statistical analysis results in the table 2 indicated that the total mean of the efficiency of decision-making in hotels was (4.33) with a standard deviation of (0.61), which indicated a high degree of agreement for all the efficiency of decision-making phrases which means that this variable has a high level at hotels.

3.2.2.3 Attitudes and Behaviors of Managers towards Big Data in Hotels

Table 3

Attitudes and behaviors of managers towards big data in hotels variable

Code	The Axis	M	SD	Rank
Attitude1	I have prior knowledge of big data analytics and its importance in decision-making.	3.58	1.16	4
Attitude2	I always make a decision based on accurate, logical, and previously analyzed data.	4.02	.87	3
Attitude3	I always check the accuracy of the data provided by the employees before making a decision.	4.35	.65	2
Attitude4	I always strive to develop myself to keep pace with technological development.	4.48	.60	1
Total		**4.13**	**0.56**	

M=Mean **SD=**Standard Deviation

According to table 3 "**Attitude4**" comes at a first rank (M= 4.4861, *SD*= 0.60894). Followed by " Attitude3" (M= 4.35, *SD*= 0.65). Moreover, "**Attitude2**" comes at a third rank (M= 4.02, *SD*= 0.87). Furthermore, "**Attitude1**" is ranked last variable (M= 3.5, *SD*= 1.16), this result disagreed with Rodrigues *et al.* (2020), who emphasized that senior hotel managers report a low level of understanding about BDA capabilities.

It is noteworthy to mention, the statistical analysis results in the table 3.5 indicated that the total mean of attitude and behavior of managers towards BD in hotels was (4.13) with a standard deviation of (0.56), which indicated a high degree of agreement for all attitudes and behaviors of managers towards BD in hotels variable phrases which means that this variable has a high level at hotels.

3.2.2.4 Challenges of Applying Big Data Analytics in Hotels

Table 4
Descriptive statistics for challenges of applying big data analytics in hotels variable

Code	The Axis	M	SD	Rank
Challenge1	One of the challenges faced by the hotel is the high cost of using big data analytics applications in the hotel.	4.03	1.07	1
Challenge2	The ever-increasing sheer volume of data is one of the challenges of implementing big data analytics in the hotel.	3.94	.97	7
Challenge3	The difficulty of storing data is one of the challenges of applying big data analytics in the hotel.	3.95	.99	6
Challenge4	Violation of the privacy of data owners is one of the challenges of implementing big data analytics in the hotel.	3.95	1.04	5
Challenge5	The difficulty of preserving (security) data, one of the challenges of applying big data analytics in the hotel.	4.01	.99	4
Challenge6	The lack of an integrated team of analysts is one of the challenges of implementing big data analytics in the hotel.	4.03	.93	2
Challenge7	The lack of appropriate technical programs for analysis is one of the challenges of applying big data analytics in the hotel.	4.02	1.00	3
Challenge8	One of the challenges of applying big data analytics in the hotel is the weak technical skills of those in charge of analyzing big data.	4.03	.95	2
Challenge9	The lack of support from senior management to apply big data analytics is one of the challenges of applying big data analytics in the hotel.	3.72	1.33	8
Total		**3.96**	**0.73**	

M=Mean **SD=**Standard Deviation

Based on the previous table, "**Challenge1**" comes at a first rank (M= 4.03, *SD*= 1.07), this result agreed with Al-Qirim *et al.* (2017), Who confirmed that the BDA application is very expensive. Followed by "**Challenges6**" (M= 4.03, *SD*= 0.93). Likewise, "Challenge8" comes at a second rank (M= 4.03, *SD*= 0.95). Furthermore, "**Challenge7**" comes at a third rank (M= 4.02, *SD*= 1). Moreover, "**Challenge5**" comes at a fourth rank (M= 4.01, *SD*= 0.99), this result agreed with Nunan and Di Domenico (2013), who emphasized that there are concerns around security of BDA. However, "**Challenge3**" comes at a 6th rank (M= 3.95, *SD*= 0.99), this result agreed with Rodrigues *et al.* (2020), who emphasized that the challenge of hotel managers is

to store these large amounts of data. Furthermore, "**Challenge9**" is ranked last variable (M= 3.72, *SD*= 1.33) this result agreed with Manohar (2020), who emphasized that Organizations are still reluctant to use BDA.

It is noteworthy to mention, the statistical analysis results in the table 4 indicated that the total mean of the challenges of applying BDA in hotels was (3.96) with a standard deviation of (0.73), which indicated a high degree of agreement for all the challenges of applying BDA in hotels phrases which means that this variable has a high level at hotels.

3.2.3 TEST OF HYPOTHESES

To test H_1, Independent sample T test was used as follows:

Table 5
Statistically significant differences between independent hotels and hotel chains in terms of applying BDA at a significance level of 0.05

Dependent Variable	Hotel type	N	Mean	SD	Sig.
BDA	chain	153	4.10	.474	.000
	independent	98	3.90	.377	

The above table showed that sig. level is .000 (less than .05), which mean that there are differences between chains and hotels with regard to applying BDA, these differences are in favor of chains (M= 4.10, SD= 0.47). So, the first hypothesis H_1 is not accepted.

To test H_2, Chi-Square test was used as follows:

Table 6
Correlation between years of experience and efficiency of decision-making in the hotel industry at a significance level of 0.05

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	55.343	32	.006
Likelihood Ratio	50.344	32	.021
Linear-by-Linear Association	5.614	1	.018
N of Valid Cases	251		

From the results of table 6, it is clear that there is a statistically significant relationship between years of experience and efficiency of decision-making in the hotel industry at a significance level of 0.05 where Sig. value is (0.006), so the second hypothesis H_2 is not accepted.

To test H_3, Pearson and linear regression tests were used as follows:

Table 7
Correlation between perceived usefulness from applying BDA and efficiency of decision-making in the hotel at a significance level of 0.05

Variables		Efficiency of decision-making
Perceived Usefulness	Pearson Correlation	. 096**
	Sig. (2-tailed)	.131
	N	251

**. Correlation is significant at the 0.01 level (2-tailed).

Table 8

Regression coefficients for the effect of perceived usefulness from applying BDA on the efficiency of decision-making

Model	B	R^2	T	Sig.
(constant)	4.129	0.009	28.78	.000
Percieved_Usefulness	.057		1.517	.131

From tables (7) and (8) the, (R) value (0.096) with Sig. value that more than 0.05 (0.131) referred that there is no statistical correlation between perceived usefulness from applying BDA and the decision-making in the hotel industry from the managers' point of view, as well as the coefficient of determination (R^2) is (0.009), suggesting that 0.9% of the variation of the efficiency of decision-making was explained by the perceived usefulness from applying BDA variable. Moreover, it seems that the regression coefficient statistically not significant, P > 0.05 (0.131), so the variable of (perceived usefulness from applying BDA) has no statistical effect on the efficiency of decision-making. This result coincided that ***H₃*** is accepted. This is inconsistent with Chiheb *et al.* (2019), where they indicated that BDA helps organizations to make better and effective decisions.

To test ***H₄***, Pearson and linear regression tests were used as follows:

Table 9

Correlation between the easiness of applying BDA and Attitudes and behaviors of managers towards BD in hotels.

Variables		Easiness of applying BDA
Attitude	Pearson Correlation	.202**
	Sig. (2-tailed)	.001
	N	251

**. Correlation is significant at the 0.01 level (2-tailed).

Table 10

Regression coefficients for the effect of attitudes and behaviors of managers towards BD on the easiness of applying BDA

Model	B	R^2	T	Sig.
(constant)	3.628	0.041	18.410	.000
Attitudes and behaviors of managers towards BD	.154		3.249	.001

From tables (9) and (10) the, (R) value (0.202) referred that there is a low degree of correlation between attitudes and behaviors of managers towards BD and the easiness of applying BDA from the managers' point of view, as well as the coefficient of determination (R^2) is (0.041), suggesting that 4.1% of the variation of the easiness of applying BDA was explained by the Attitudes and behaviors of managers towards BD variable. Moreover, it seems that the regression coefficient statistically significant, P > 0.05, so the variable of (Attitudes and behaviors) has a statistical effect on the easiness of applying BDA. This result coincided that ***H₄*** is unacceptable; the following equation can be inferred to predict the easiness of applying BDA from the level of attitudes and behaviors of managers towards BD as follow:

Easiness of applying BDA = 3.628 + (0.154 * Attitudes and behaviors)

4. CONCLUSION

The research pointed to a number of results with respect to the big data analytics' utilization in Egyptian hotels' decision-making in the investigated governorates. The points of the conclusion can be presented in the following:

1. Hotels need to rationalize costs and create new opportunities.
2. The data collected from its sources are analyzed when making decisions regarding each department.
3. Using BDA helps to increase the effectiveness and efficiency of hotel workers.
4. Managers are always striving to develop themselves to keep pace with technological development and making the right decision helps managers to achieve hotel goals.
5. Hotel managers have confirmed that the high cost of using BDA is one of the main challenges of implementing it in hotels.
6. Hotel managers have assured that the difficulty of preserving (security) data is one of the challenges of implementing BDA in hotels.
7. Hotel managers have assured that the difficulty of storing data is one of the challenges of implementing BDA in hotels.
8. There are statistically significant differences between independent hotels and hotel chains in terms of applying BDA, these differences are in favor of hotel chains.
9. There is a statistically significant correlation between years of experience and decision-making efficiency in the hotel industry.
10. There is no statistically significant effect of perceived usefulness from applying BDA on decision-making efficiency in the hotel industry.
11. There is a statistically significant effect of attitudes and behaviors of managers towards BD on the easiness of applying BDA in hotels.

5. LIMITATION AND FUTURE RESEARCH

This research has several and various determining restrictions yet determines opportunities for future studies. First, this research was limited to mangers of independent hotels and hotel chains. Secondly, this research was limited to hotel' managers in hotel chains and five-star hotels in the governorates of Luxor, Aswan, the Red Sea, and Sharm El-Sheikh city. Future researchers should have to focus on the effect of BDA on hotel revenue, hotel performance and guest satisfaction, research on the extent of application of big data in four-star hotels and economical hotels, and the detection of obstacles to its application in other governorates.

6. IMPLICATIONS AND RECOMMENDATIONS

Based on the previous findings, senior management should provide full financial support for the BDA application, which is considered beneficial in achieving hotel goals. Furthermore, preparing an integrated team of analysts to carry out BDA in hotel, and providing them with continuous training. On the other hand, in cooperation with the Ministry of Tourism and Egyptian Hotel Association, academic institutions should introduce, support and develop BD and BDA educational programmes and units for hotel managers. Finally, senior management should provide support to

managers, which generally considered useful in helping them accomplish assignments.

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استخدام تحليل البيانات الضخمة في اتخاذ القرار بالفنادق المصرية: ما هي تحديات تطبيق تحليل البيانات الضخمة؟

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الملخص

يساعد تحليل البيانات الضخمة جميع أنواع المؤسسات في كلاً القطاعين العام والخاص على اتخاذ أفضل وأسرع القرارات وأكثرها كفاءة. لذلك، يهدف البحث الحالي إلى استكشاف مدى الاستفادة من تحليل البيانات الضخمة في اتخاذ القرار بالفنادق المصرية، والكشف عن الصعوبات التي تواجه مديري السلاسل الفندقية والفنادق فئة الخمسة نجوم لتطبيق تحليل البيانات الضخمة. طور هذا البحث جميع القياسات باستخدام المقاييس التي اقترحها المؤلفون السابقون. استخدم البحث الحالي النهج الكمي. تم استخدام مقياس ليكرت الخماسي لاختبار موقف مديري الفنادق تجاه متغيرات البحث. شارك في هذا الاستطلاع السادة مديري الفنادق في السلاسل الفندقية والفنادق فئة الخمس نجوم في محافظات الأقصر وأسوان والبحر الأحمر ومدينة شرم الشيخ. وجد البحث أن الفنادق بحاجة إلى ترشيد التكاليف وخلق فرص جديدة، استخدام تحليل البيانات الضخمة يساعد على زيادة الفعالية، واتخاذ القرار الصحيح يساعد المديرين على تحقيق أهداف الفندق. من ناحية أخرى، فإن التحديات التي تواجها الفنادق هي التكلفة العالية لاستخدام تطبيقات تحليل البيانات الضخمة وصعوبة أمن بيانات. علاوة على ذلك، يجب على الإدارة العليا بالفنادق تقديم الدعم المالي الكامل لتطبيق تحليل البيانات الضخمة، والذي يعتبر مفيدًا في تحقيق أهداف الفندق.