# Big Data in Egyptian Travel Agencies: Enabling Factors (TOE), Adoption Readiness and Adoption Intention

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**Abstract**
The focus of this study is on assessing the readiness of travel agencies in Egypt to adopt big data technology, along with measuring the effect of TOE (Technological, Organizational and Environmental) factors on the readiness of travel agencies to adopt BD, in addition to assessing the effect of BD readiness on the intention of Egyptian travel agencies to adopt BD. Previous studies found that BD adoption is low, and many of those who have adopted it are still in the early stages.

To measure the causal relationships among variables, the quantitative method was employed in this study. A structured questionnaire was distributed to a representative sample of Egyptian travel agencies. A sample of (278) Travel agencies were selected by simple random sampling technique, with rate of response 80.5%. The study findings revealed that the TOE factors have a significant positive effect on Egyptian travel agencies' adoption readiness of big data, but they have no significant effect on future intentions to adopt BD technology. In addition, the findings showed that BD adoption readiness has a significant positive effect on future intentions to adopt BD by travel agencies in Egypt.

The findings contribute to the current literature through adding new empirical findings and evidences regarding the travel agencies' readiness to adopt BD as well as their intention to adopt it within the underdeveloped countries such as Egypt. Furthermore, the research provides implications for professionals, practitioners, and academicians to pave the way to achieving the maximum benefits of BD technology in the field of tourism, particularly for travel agencies.

**Keywords:** Big Data – adoption readiness- Intention - (TOE) Factors - Travel Agencies

**Introduction**
Businesses now have new opportunities thanks to the "big data" (BD) era, but to take advantage of these, organisational adaptability is yet another significant factor. Decision-makers need updated insights about the new trends of the market and need to identify the new opportunities for improvement through monitoring the behaviours and experiences of customers extracted from huge amounts of data, which is considered complex and challenging (Akter, Fosso-Wamba and Dewan, 2017; Wahab *et al*., 2021; Volk *et al*., 2020)**.** According to Gonzales, Wareham and Serida (2015) the insights extracted from vast quantities of data through the application of BD are considered one of the most important technologies adopted by businesses because they help decision-makers create and maintain a better position among competitors.

Studies such as (Nam, Lee and Lee, 2019; Al-Sai, Abdullah and Husin, 2020; Almaiah and Nasereddin, 2020; Choi *et al*., 2021) found that businesses are aware of the benefits of BD but the adoption of BD is low and many of who adopted it are still in the initial adoption stage.

Moreover, Al-Sai, Abdullah and Husin (2020) added that BD is an emerging theme with lack of empirical findings, also there is limited number of BD researches with conceptual nature calling for more studies to make the literature affluent. Moreover, the most of studies are applied on developed European and North American countries. Therefore, when it comes to BD implementation, the Middle East and Africa are far behind.

Furthermore, Lutfi *et al.* (2020) adopted the TOE (technological, organizational and environmental) model to examine the enabling factors of BD adoption by Jordanian SMEs sector.

The researchers found that only one qualitative study explored the application of big data analytics in the airline industry (Al-Azab and Mohamed, 2021), and only one quantitative study applied big data analytics to the decision-making improvement of Egyptian hotels (Rady, Eljalill and Noby, 2021).

Moreover, Wahab et al. (2021) assured the need to examine big data in different contexts, such as developing countries, to enrich the literature in this area.

**Literature review**
According to Gonzales, Wareham and Serida, (2015) Big Data is a set of information from a specific time period and subject-specific data that supports management decision-making. According to Chen, Liu and Chen (2021), the importance of BD in locating alternative sources of information and developing analytical techniques is growing.
Tourism studies regarding big data have made progress from various perspectives, including those of tourists, businesses, and destinations. The dimension of tourists: proceeding studies including (Callarisa *et al.*,2012; Chaves, Gomes and Pedron, 2012; Xiang, Schwartz ,and Uysal, 2015; Miah *et al*., 2017; Peng and Huang,2017; Höpken *et al*.,2017; Pan and Yang, 2017; Song and Liu, 2017 ; Qin *et al*.,2019, Perez and Barriero ,2019 ;Barnes *et al*.,2020; Li *et al*.,2020; Sung *et al*., 2020; Höpken et al., 2021; Yang, Zhang and Fu, 2022); Sann et al.,2022; Shang, Li and Su, 2022) focused on characteristics of travel, motivation of demand, demand prediction, tourist satisfaction, tourist experience, tourist behavior, activity prediction, using big data analytics to analyze online reviews and studying how travellers behave in the post-COVID-19 era.

The dimension of businesses: previous studies such as (Sathi,2017; Singh, Ananth, and Woo,2017; Mariani *et al*.,2018; Stylos and Zwiegelaar,2019; Köseoglu *et al*.,2020; Barnes et al ., 2020); Reif and Schmücker,2020); Stylos , Zwiegelaar and Buhalis, 2021) studied visitor tracking using big data, engaging customers using big data, assessing the value of the employee-tourist interaction, BD and Tourism and hospitality innovation, intelligence of competitors and online reviews, BD analysis of local business and reviews, BD and forming of business intelligence.

The dimension of destinations: previous studies in this area such as (Del Vecchio et al., 2018; Dezfouli et al.,2018; Raj and Kajla, 2018; Park and kim, 2019; Ardito et al., 2019; Höpken et al.,2019; Gajdošík, 2019; Sigala, Rahimi, and Thelwall, 2019; Balasaraswathi et al.,2020; Cillo et al., 2021; Mohamed and El-Azab,2021; Rady, Eljalill, and Noby ,2021 ; Zhang and Dong, 2021; Mariani et al.,2021) included big data implications for smart tourism destinations, competitive productivity of tourism destinations, analytics for tourism destinations, framework for social media analytics is used to promote travel destinations, manage their online reputations, and increase their competitiveness. Monitoring and controlling a tourism destination's image, BD Analytics in smart tourism destinations, a tour planning model using big data, Spatial structures of tourism destinations, likewise, present challenges, issues, and opportunities related to BD in smart tourism.

Other studies measured the BDA adoption level, such as those by Lei, Chen, and Lim (2021), who revealed that BD analytics adoption behavior by Chinese firms is low and depends on industry type**.** Also, Iranmanesh et al. (2022) found that most of earlier research on BDA adoption intention had only been conducted with large businesses. Furthermore, Madila, Dida, and Kaijage (2022) clarified that the adoption of social media analytics (SMA) is limited, despite the fact that many SMEs in the travel industry use social media for professional purposes.

The previous studies identified the factors determining the readiness of businesses to adopt big data and their intention to adopt it, including technological, organizational, and environmental factors. They found a significant effect of the technological context on the adoption of new technology, and the most important technological factors were compatibility and complexity (Gangwar, 2018; Lai, Sun and Ren, 2018; Verma and Bhattacharyya, 2017; Yadegaridehkordi et al., 2020; Park and Kim, 2021; El-Haddadeh et al., 2021). Furthermore, according to Maroufkhani, Iranmanesh, and Ghobakhloo (2022), organisational factors such as top management support, security concerns, a culture of rational decision-making, and organisational readiness were consistently important organisational factors.

Furthermore, environmental factors included government support and regulations, pressure of competition, relative advantage, supply chain connectivity, and environmental uncertainty, which were significantly found as environmental factors that influence SMEs' BDA adoption according to (Lai, Sun and Ren, 2018; Yadegaridehkordi *et al*., 2020; Park and Kim, 2021 ; Iranmanesh, et al., 2022).

Travel agencies can benefit from big data as it can improve decision-making, identify major challenges, improve their market positioning (Rialti et al., 2019; Sen, Ozturk, and Vayvay, 2016), innovation (Ghasemaghaei and Calic, 2020), and overall performance (Dong, 2020). Moreover, Dong and Yang (2020); Mangla et al.(2021) added that big data technology adoption provide enterprises with the ability to obtain accurate forecasting of customer and market behavior, reduces the insecurity, time for organizational changes, and the production cost.

According to Rialti et al. (2019), SMEs need collaboration among each other and outsourcing as they are suffering resource and knowledge barriers to enjoy the opportunities offered by big data technology.

Travel agencies face many challenges to adopt Big data technology including according to Liu et al. (2020) the shortage in employees competencies to deal with Big data complex technologies, security of data, legal issues such as data privacy and organizational structures according to Coleman *et al*. (2016), and the huge cost of adoption as found by (Del Vecchio et al., 2018).

The current study used the TOE model for several reasons. First, it includes the dimension of environmental factors, which is not included in the theory of innovation diffusion. Second, it explains how TOE factors influence technology adoption, including big data (Grant and Yeo, 2018). Third, the TOE model is widely used by researchers (Oliveira and Martins, 2011; Hsu, Ray and Li-Hsieh, 2014; Maduku, Mpinganjira, and Duh, 2016). Fourth, the TOE model can be applied in a variety of contexts, enabling the inclusion or exclusion of any TOE factors relevant to the contexts of their studies (Grant and Yeo, 2018).

The study on hand adopts the theory of (technological, organizational and environmental) (TOE) which includes innovation theory to find out how organizations adopt information technology and the theory of Technology Readiness Index (TRI) (Marr, B. 2015; Chong, Kim, and Choi., 2021; Oliveira, Thomas and Espadanal, 2014).

Oliveira *et al*.(2019) and Lutfi *et al*.,(2020) found that the (TOE) model and Diffusion of Innovation theory (DOI) models can help researchers investigate how information technology is being adopted in small and medium-sized businesses.

Moreover, TOE focuses on factors found to internally and externally influence firm technology adoption, whereas DOI focuses on technological attributes as an enabler for information technology adoption.

The current study proposes a conceptual model that hypothesizes causal relations among the TOE factors, BD adoption readiness, and the intention to adopt BD.
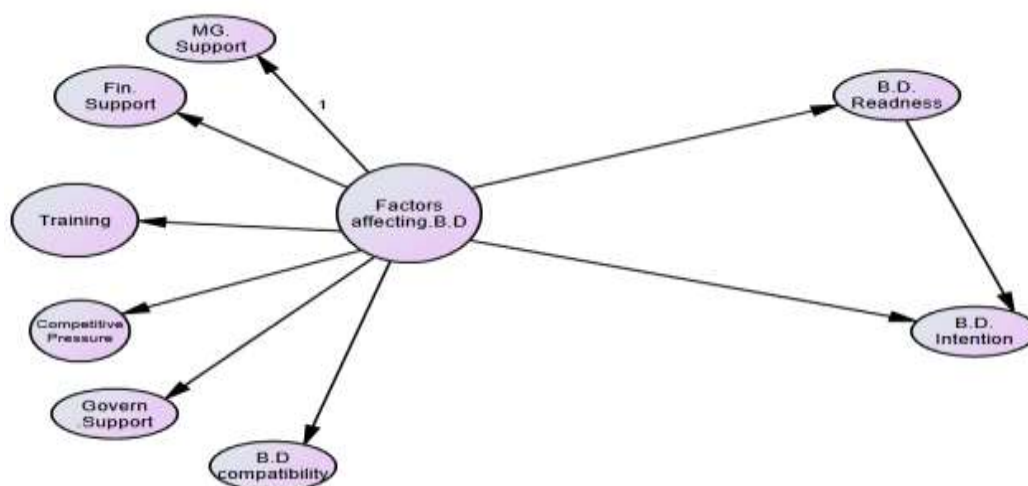


Figure (1) proposed conceptual Model

Based on the previous conceptual model the current study tests the following hypotheses:

**(H1):** TOE Factors has a positive impact on BD readiness to adopt by the Egyptian Travel Agencies.

Hypothesis 1 is developed from previous studies that measured the effect of TOE factors, including top management support: (Ragu-Nathan et al., 2004; Lian, Yen, Wang, 2014; Oliveira, Thomas, Espadanal, 2014; Lai, Sun, Ren. 2018; Maroufkhani, Wan Ismail and Ghobakhloo, 2020; Ghaleb et al.,2021; Iranmanesh, et al., 2022),financial support: (Chan, and Chong, 2013; Jamoom et al., 2014; Ghaleb et al.2021),training: (Stratman, and Roth, 2002; Ghaleb et al., 2021),Pressure of Competition:(Mukred et al., 2019**;** Iranmanesh, et al., 2022), support of government:(Gangwar, Date, Ramaswamy, 2015; Lai, Sun and Ren, 2018); Mukred et al., 2019); Maroufkhani, Wan Ismail and Ghobakhloo, 2020; Ghaleb et al., 2021**;** Iranmanesh, et al., 2022), and compatibility and complexity of Big Data: (Oliveira, Thomas, Espadanal, 2014; Chen, Preston and Swink, 2015; Xu, Ou, and Fan, 2015; Maroufkhani, Wan Ismail, Ghobakhloo, 2020); Chong, Kim, and Choi, 2021; Agrawal, 2015; Ghaleb et al., 2021; Park and Kim, 2021) on BD adoption readiness.

**(H2):** BD adoption readiness by the Egyptian Travel Agencies has a positive impact on their intention to adopt BD.
Hypothesis 2 is developed from previous studies that measured the effect BD adoption readiness on the intention to adopt BD including (Oliveira, Thomas, Espadanal, 2014; Gangwar, Date, Ramaswamy, 2015; Sam and Chatwin, 2018); Chong, Kim, and Choi, 2021; Ghaleb *et al*., 2021; Yadegaridehkordi et al ., 2020; Gangwar, Date, Ramaswamy, 2015; Sam and Chatwin, 2018; Mukred et al., 2019; Chong, Kim, and Choi, 2021; Iranmanesh, et al.,2022).

**Method**
This research followed the quantitative method to assess the effect of the independent on the dependent variables as causal relations (Saunders, Lewis, & Thornhill, 2016).
A structured survey questionnaire is utilized to measure the major constructs. The population of this study is the Egyptian travel agencies provided by the (ETAA) Egyptian Travel agents Association. The sample collected using simple random sampling technique consisting 278 travel agencies and the response rate was 224 travel agency equal (80.5%).The sample size is calculated using Thomson equation (Thompson, 2012).

**Measurement**
The current study utilized 5-point Likert scales to assess variables on a scale from 1 (strongly disagree) to 5(strongly agree).

**The questionnaire validity and the pilot testing**
Convergent and discriminant validity are two measures of measurement model validity. Furthermore, convergent validity is calculated through composite reliability (CR) that assesses reliability of construct where loadings of factors within construct should be according to (Chin, 2009) greater than 0.40 also (Hair, Ringle and Sarstedt, 2011) stated that only high factors with high loading will precede to next step of analysis, also the average variance extracted (AVE). Accordingly the analysis reduced the construct of financial support from three items into two items by removing (the third item), and also the construct of Big data compatibility and complexity from five items to three items (the first and the fifth). Discriminant validity (Table 2) measures the distinction of latent variables from each other according to (Hair, Ringle and Sarstedt, 2011)

## The measurement model

Table 1 shows the construct validity and reliability of the measurement model, with composite reliability and Cronbach's alpha values for all constructs that exceeded 0.70 and AVEs exceeded 0.50, indicating convergent validity according to Bland and Altman (1994). Furthermore, multivariate normality od data tested using online tool (https://www.statology.org/skewness-and-kurtosis-calculator/ (2022) and the result indicated that the data set is normal as its skewness and kurtosis, which are consistent with a normal distribution, are between (- and+1) and (- and+3), respectively.

Table (1) constructs validity and reliability

| Construct | indicator | Standardized loading | Error variance | Item R-square | Composite Reliability | AVE | Cronbach's Alpha | Normality | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | skew | kurtosis |
| Big Data adoption Readiness | 1- The management of my travel agency understands the tourism sector's potential use of big data.. | .825 | 0.319 | 0.681 | 0.908 | 0.529 | 0.987 | 0.14 | -1.85 |
| | 2- My travel agency's IT infrastructure (internet services/devices) is adequate and can be used for Big Data. | .635 | 0.597 | 0.403 | | | | 0.17 | -1.83 |
| | 3- My travel agency's management has already effectively promoted the use of Big Data to the staff. | .791 | 0.374 | 0.626 | | | | 0.16 | -1.84 |
| | 4- My travel agency's staff has the necessary expertise to work with big data. | .676 | 0.543 | 0.457 | | | | 0.16 | -1.85 |
| | 5- My travel agency's staff is equipped with the analytics skills to exploit Big Data | .752 | 0.518 | 0.482 | | | | 0.20 | -1.82 |
| | 6- My Travel agency's IT and management have the necessary expertise to drive the transformation of the travel agency, and they offer top-notch support to the staff. | .694 | 0.518 | 0.482 | | | | 0.16 | -1.85 |
| | 7- My travel agency has the necessary capital and financial resources to fully exploiting Big Data | .702 | 0.507 | 0.493 | | | | 0.16 | -1.86 |
| | 8- The management of my travel agency is aware of the relative advantages of implementing Big Data. | .854 | 0.271 | 0.729 | | | | 0.16 | -1.84 |
| Intention to adopt BD | 1- My travel agency intends to adopt Big Data | .850 | 0.278 | 0.722 | 0.876 | 0.587 | | 0.18 | -1.82 |
| | 2- My travel agency | .761 | 0.421 | 0.579 | | | | 0.17 | -1.83 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | intends to regularly utilise big data in the future | | | | | | 0.972 | | |
| | 3- The adoption of BD by other travel agencies is strongly encouraged by my travel agency. | .709 | 0.497 | 0.503 | | | | 0.13 | -1.86 |
| | 4- My travel agency would gladly provide information for the use of BD technology. | .809 | 0.346 | 0.654 | | | | 0.17 | -1.84 |
| | 5-Our travel agency would make use of the BD technology. | .691 | 0.523 | 0.477 | | | | 0.15 | -1.85 |
| | | | | | | | | | |
| Top Management support | 1- Planned Big Data adoption is supported by my travel agency's top management. | .625 | 0.609 | 0.391 | | | | 0.20 | -1.82 |
| | 2- My travel agency's senior management will support the adoption of BD. | .705 | 0.503 | 0.497 | | | | 0.22 | -1.79 |
| | 3- The top management of my travel agency is ready to accept the organisational and financial risks associated with adopting Big Data. | .765 | 0.415 | 0.585 | 0.883 | 0.559 | 0.978 | 0.20 | -1.82 |
| | 4- The size of my travel agency is appropriate for the use of BD. | .724 | 0.476 | 0.524 | | | | 0.17 | -1.84 |
| | 5- The support of my travel agency's senior management is crucial in order to secure the funding needed for the organisation to implement BD. | .817 | 0.333 | 0.667 | | | | 0.22 | -1.81 |
| | 6- Big data is emphasized as a strategic priority by my travel agency's top management. | .829 | 0.313 | 0.687 | | | | 0.15 | -1.85 |
| Financial support | 1- The necessary hardware and software can be purchased by my travel agency due to its financial capacity. | .631 | 0.602 | 0.398 | 0.711 | 0.557 | 0.831 | 0.17 | -1.85 |
| | 2- For the purchase of new technological equipment, financial support is crucial. | .846 | 0.284 | 0.716 | | | | 0.17 | -1.84 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Training | 1- Big Data training makes sure that staff members have the proper training. | .746 | 0.443 | 0.557 | 0.831 | 0.553 | 0.952 | 0.18 | -1.82 |
| | 2- All involved staff members have received sufficient training on using big data. | .839 | 0.296 | 0.704 | | | | 0.18 | -1.84 |
| | 3- All users have received basic technology training for the Travel system. | .740 | 0.452 | 0.548 | | | | 0.17 | -1.84 |
| | 4- My travel agency's staff needs are being met by Big Data training. | .635 | 0.597 | 0.403 | | | | 0.16 | -1.86 |
| Competitive pressure | 1- Competitors are pressuring my travel agency to use Big Data. | .700 | 0.510 | 0.490 | 0.813 | 0.592 | 0.929 | 0.18 | -1.83 |
| | 2- What our competitors are doing influences our decision to adopt BD. | .770 | 0.407 | 0.593 | | | | 0.15 | -1.83 |
| | 3- My travel agency will employ big data to counteract what my rivals are doing. | .833 | 0.306 | 0.694 | | | | 0.14 | -1.85 |
| Government support | 1- Our travel agency is encouraged by government policies to use big data. | .646 | 0.583 | 0.417 | 0.819 | 0.534 | 0.948 | 0.14 | -1.86 |
| | 2- The government offers a variety of incentives to encourage the adoption of BD. | .876 | 0.233 | 0.767 | | | | 0.18 | -1.83 |
| | 3- BD technology is supported by the government through the enactment of laws and the provision of legal protection. | .716 | 0.487 | 0.513 | | | | 0.17 | -1.84 |
| | 4- The government enacts legislation to encourage the adoption of big data. | .663 | 0.560 | 0.440 | | | | 0.17 | -1.84 |
| Big Data compatibility and | 1- Adopting Big Data fits our travel agency's organisational culture. | .748 | 0.440 | 0.560 | 0.761 | 0.516 | 0.905 | 0.16 | -1.85 |
| | 2- In general, incorporating Big Data into our Travel Agency's business is easy. | .766 | 0.413 | 0.587 | | | | 0.19 | -1.82 |
| | 3- 4- Employees can easily learn how to use Big Data. | .635 | 0.597 | 0.403 | | | | 0.17 | -1.82 |

Table (2) Square roots of AVEs and correlations among constructs

| | Big Data adoption Readiness | Intention to adopt BD | Top Management support | Financial support | Training | Competitive pressure | Government support | Big Data compatibility and complexiv |
|---|---|---|---|---|---|---|---|---|
| Big Data adoption Readiness | 0.727 | | | | | | | |
| Intention to adopt BD | 0.489 | 0.766 | | | | | | |
| Top Management support | 0.318 | 0.241 | 0.748 | | | | | |
| Financial support | 0.306 | 0.322 | 0.344 | 0.746 | | | | |
| Training | 0.344 | 0.291 | 0.397 | 0.488 | 0.743 | | | |
| Competitive pressure | 0.344 | 0.259 | 0.372 | 0.265 | 0.295 | 0.769 | | |
| Government support | 0.187 | 0.309 | 0.205 | 0.245 | 0.279 | 0.428 | 0.731 | |
| Big Data compatibility and complexity | 0.230 | 0.170 | 0.117 | 0.154 | 0.185 | 0.333 | 0.477 | 0.718 |

The findings of convergent validity of the measurement model are revealed in Table ( 2) where composite reliability and Cronbach's alpha according to Hair *et al*., (2016) for all constructs exceed 0.70 and AVEs more than 0.50 (Table 2), indicating convergent validity as stated by (Altman and Bland, 1994); and Chin (2009)..

Discriminant validity (Table 2) measures the distinction of latent variables in the model from each other according to Hair, Ringle and Sarstedt (2011) where the findings show that the AVE square root for each variable is higher than all of the correlation among the latent variable and others in the model revealing acceptable discriminant validity for the model.

Table (3) descriptive analysis of constructs

| | N | % | | | | | MEAN | Std.Deviation |
|---|---|---|---|---|---|---|---|---|
| | | Strongly disagree | disagree | Neutral | Agree | Strongly agree | | |
| Big Data adoption Readiness | 224 | 1.5 | 3.4 | 5.5 | 48 | 41.6 | 4.25 | 0.52 |
| Intention to adopt BD | 224 | 1.9 | 2.2 | 7.4 | 45.5 | 42.9 | 4.27 | 0.57 |
| Top Management support | 224 | 2.2 | 4.7 | 6 | 43.5 | 43.6 | 4.23 | 0.60 |
| Financial support | 224 | 1.8 | 2.2 | 5.1 | 45.1 | 45.8 | 4.31 | 0.60 |
| Training | 224 | 1.3 | 3.9 | 6.4 | 44 | 44.4 | 4.26 | 0.63 |
| Competitive pressure | 224 | 1.8 | 2.5 | 6.3 | 46.4 | 43 | 4.27 | 0.63 |
| Government support | 224 | 1.2 | 4 | 4.9 | 48.5 | 41.3 | 4.25 | 0.60 |
| Big Data compatibility and complexity | 224 | 2 | 3.4 | 6.5 | 48 | 40.1 | 4.21 | 0.63 |

According to the means shown in table(3)  respondents strongly agree that the Travel agencies in Egypt are ready to adopt Big data technology, strongly agree on intending to use big data in the future, agree that top management provide support for adopting Big data, strongly agree that the owners of Travel agencies in Egypt provide financial support for adopting Big data, strongly agree on providing training on BD,  strongly agree that competitive pressure push travel agencies to get benefit of adopting BD , strongly agree that the government offers assistance in implementing cutting-edge technologies like big data., and agree that the complexity and compatibility of Big data technology is one of the Technological that affect their readiness to adopt BD.
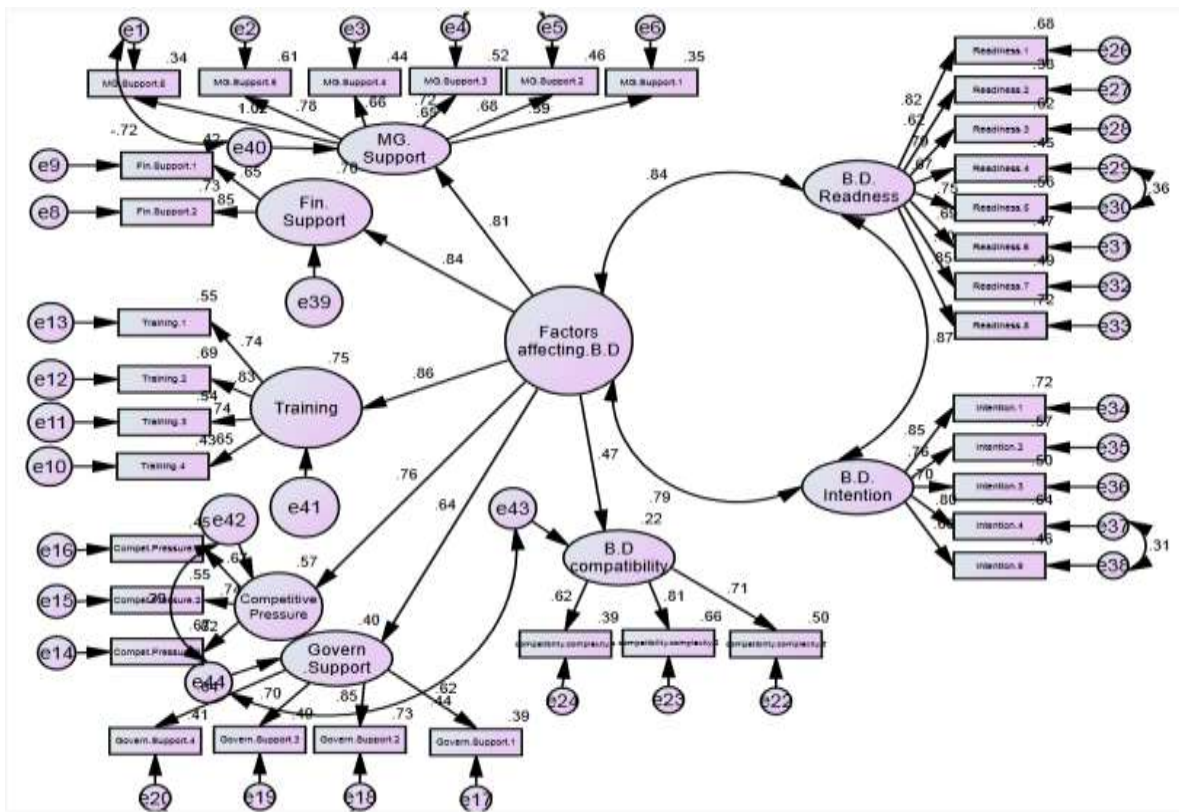
Figure (2) Measurement Model

**Table no (4) Measurement model Goodness of Fit**

| Model Goodness of Fit | Indices of current model | Target limits (ideal) |
|---|---|---|
| Chi-squared | 922.6 | |
| Degrees of freedom | 547 | (must be > 0) |
| Chi-squared P-value | .052 | (ideal when >.05) |
| **Incremental fit indices** | | |
| CFI | .818 | (ideal when > 0.9) |
| RMSEA | 055 | Lower values of RMSEA indicate a better fit |
| PNFI Ratio | .600 | (highest PNFI values represent good fit) |
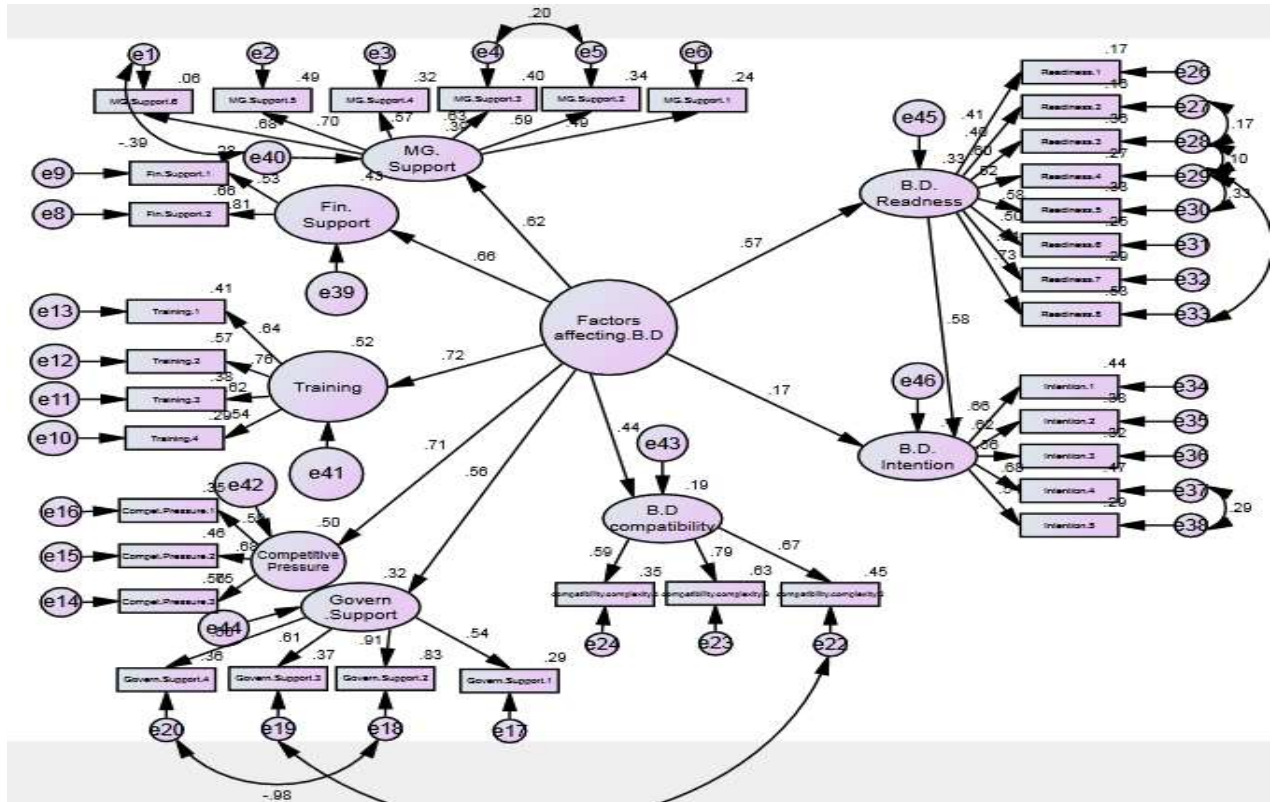
Figure no (3) structured model

## Structured model Goodness of Fit
Table (4) Structured model fit indices

| Model Goodness of Fit | Indices of current model | | Target limits (ideal) |
|:---:|:---:|:---:|:---:|
| Chi-squared | 769.273 | | |
| Degrees of freedom | 542 | | (must be > 0) |
| Chi-squared P-value | .052 | | (ideal when >.05) |
| **Incremental fit indices** | | | |
| CFI | .890 | | (ideal when > 0.9) |
| RMSEA | .043 | | Lower values of RMSEA indicate a better fit |
| PNFI Ratio | .647 | | (highest PNFI values represent good fit) |

According to the previous goodness of fit indices the structured model is fit

**Findings**
According to table 5 the structured model revealed the following presented findings:
Table (5) findings approved by the structured model

| 1 | The factors (TOE) that affecting BD adoption including (Management support, financial support, Training, competitive pressure, government support, and Big data compatibility and complexity) have significant positive impact on the readiness of the Egyptian travel agencies to adopt big data technology where ($\beta$= 0.57 with P<0.5) | hypothesis 1 is supported |
|---|---|---|
| 2 | The readiness of the Egyptian travel agencies to adopt big data technology has significant positive impact on their intention to adopt it where ($\beta$= 0.58 with P<0.5). | Hypothesis 2 is supported |

Source: structured model findings presented in figure number (3)

**Discussion and conclusion**
The current study examines the variables that influence the readiness and intent of Egyptian travel agencies to adopt big data technology that can grant them the capacity to read the new trends of market and identify the new opportunities for improvement through monitoring the behaviours and experiences of customers extracted from huge amounts of data which is considered complex and challenging.

Findings of this study revealed that 89.6% of the Egyptian travel agencies' managers strongly agree and agree that the Travel agencies in Egypt are ready to adopt Big data technology, almost 88% of them has the intention to adopt Big Data on the future, 87% are strongly agree and agree that top management provide support for adopting Big data, 91% are strongly agree and agree that the owners of Travel agencies in Egypt to provide financial support for adopting Big data, 88.4% are strongly agree and agree that competitive pressure push travel agencies to get benefit of adopting Big data, almost 90% are strongly agree and agree that new technologies such as BD are supported by the government, and 88%are strongly agree and agree that the complexity and compatibility of Big data technology.

Moreover, the findings indicated that, management support, financial support, training, competitive pressure, government support, and Big data compatibility and complexity have significant positive impact on the readiness of the Egyptian travel agencies to adopt big data technology which is in line with the findings of (Gangwar,2018); (Lai, Sun and Ren, 2018); (Park and Kim, 2021); (El-Haddadeh *et al*.,2021) ; (Maroufkhani, Iranmanesh and Ghobakhloo, 2022); (Youssef, Eid, and Agag, 2022);(Iranmanesh *et al*., 2022).

Furthermore, the findings of this study proved that the readiness of the Egyptian travel agencies to adopt big data technology has significant positive impact on their intention to adopt it which was found to agree with the findings of (Ghaleb *et al*.,2021).

Using data gathered from travel agencies in Egypt, this study provides a model that depicts the causal relationship between the Factors influencing Egyptian travel agencies' readiness to adopt Big data technology, as well as the effect of readiness to adopt Big data on future intention to adopt it.

In general, the study's findings show that management and financial support, effective training on big data technologies, monitoring competitors' efforts to benefit from big data, leveraging government opportunities to support travel agencies' adoption of new technologies and digitization, and the compatibility of big data technologies with travel agencies' systems can prepare them to adopt big data.

**Future research and Limitations**
This study only applied to Egyptian travel agencies, which might prevent the results from being generalized; therefore, other studies that will be implemented in other countries will provide a clear and complete picture of the adoption readiness and intention to adopt big data technologies and analytics by travel agencies worldwide. Furthermore, future research should assess the impact of BD adoption on the overall performance of travel agencies that have adopted BD. Other businesses in the tourism sector will also be subject to implementing studies like the current one.

**Implications**
The researchers provide implications for travel agencies practionners, government organizations and researchers based on this study finding as the following:
- Big data technology cannot replace human resources, but it can improve their ability to provide more customized and competitive services, experiences as well as taking better decisions based on instant and up-to-date insights provided by BD about new market trends, customer expectations and identify new opportunities for improvement by monitoring customer behaviours and experiences extracted from massive amounts of data that are considered complex and challenging.
- Because travellers are becoming more aware of the value of their opinions, personal data, and information, travel agencies must protect their customers' privacy and personal information while also finding ethical ways to exchange data and information, so that they can establish and maintain trust through adopting internal organisational values in order to maintain their image as trustworthy agencies.
 -Travel agency managers and employees should receive specialised training on how Big Data can be used in their industry.
- Travel agencies should employ specialized well trained teams devoted for data analysis.
- Travel agencies must form some sort of collaboration because big data technologies require large investments, or they must pay Google to provide them with up-to-date insights.
- Travel agencies must allocate resources and provide training to improve their digital operational efficiency regarding data management technologies such as Big data.
- Travel agencies should encourage their customers to provide feedback about their experiences online and make such feedback available on their websites or social media pages.

## البيانات الضخمة في وكالات السفر المصرية: العوامل التمكينية (TOE) ، والاستعداد للتبني ، ونية التبني.

**المستخلص**
تركز هذه الدراسة على تقييم مدى استعداد وكالات السفر في مصر لتبنى تكنولوجيا البيانات الضخمة ، إلى جانب قياس تأثير عوامل التمكين TOE (التكنولوجية والتنظيمية والبيئية) على استعداد وكالات السفر لتبنى تكنولوجيا البيانات الضخمة ، بالإضافة إلى تقييم تأثير استعداد تبنى تكنولوجيا البيانات الضخمة على نية وكالات السفر المصرية لتبنيها. وجدت الدراسات السابقة أن معدل تبني تكنولوجيا البيانات الضخمة منخفض ، ولا يزال العديد ممن تبنوها في مراحلها المبكرة. لقياس العلاقات السببية بين المتغيرات تم استخدام الطريقة الكمية في هذه الدراسة. وقد تم توزيع استبيان منظم على عينة ممثلة من وكالات السياحة والسفرالمصرية. تم اختيار عينة قوامها (278) وكالة أسفار بتقنية العينات العشوائية البسيطة ، وبلغت نسبة الاستجابة على الاستبيان 80.5٪. كشفت نتائج الدراسة أن عوامل التمكين TOE لها تأثير إيجابي كبير على استعداد وكالات السفر المصرية لتبني البيانات الضخمة ، بينما ليس لها تأثير معنوى على النوايا المستقبلية لتبنى تكنولوجيا البيانات الضخمة من جانب وكالات السياحة والسفر فلى مصر.
تساهم النتائج الدراسة الحالية من خلال إضافة نتائج وأدلة تجريبية جديدة فيما يتعلق باستعداد وكالات السفر لتبني تكنولوجيا البيانات الضخمة وكذلك نيتها في تبنيها داخل البلدان النامية مثل مصر. علاوة على ذلك ، تقدم الدراسة توصيات تطبيقية للمهنيين والممارسين والأكاديميين لتمهيد الطريق لتحقيق أقصى استفادة من تكنولوجيا البيانات الضخمة في مجال السياحة ، لا سيما لوكالات السياحة والسفر.

**الكلمات الدالة:** البيبانات الضخمة ، الاستعداد لتبنى ، النية للتبنى، عوامل التمكين (TOE) ، وكالات السياحة والسفر.

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