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The impact of Managerial big data analytical competencies on the asset productivity and Business growth of corporate marketing firm in Asia

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Abstract

This study's objective is to assess the influence of management big data analytical competencies on asset productivity and business expansion in Asian corporate marketing firms. The research is conducted utilizing a quantitative research design, and data is collected from a selection of regional corporate marketing groups. The presence of managerial big data analytical competencies appears to have a positive effect on asset productivity and business expansion in Asian corporate marketing organizations, according to the findings. Furthermore, the research reveals that some competencies, such as data visualization and statistical analysis, have a stronger correlation with asset productivity and business performance than others. The findings have implications for managers and policymakers in the region, and they highlight the need to improve and invest in managers' skills in order to increase asset productivity and business growth through the use of big data analytics. This study contributes significantly to our understanding of the role that managerial big data analytical competencies play in boosting asset productivity and commercial performance in Asia. In general, the findings suggest that firms could benefit from a concerted strategy to develop the competencies of managers in the area of leveraging big data analytics for increased asset productivity and business expansion.

Keywords: big data, analytical competencies, asset productivity.

BACKGROUND

The environment in which organizations operate is changing rapidly. The dynamics of the environment influence organizations to alter their practices and operations. The rapidly developing technology along with the needs of customers has serious consequences for businesses (Shabbir & Gardezi,2020). The development of network business has increased the variety, volume, velocity of structured as well as unstructured information, which is referred to as big data. Efforts are made by managers to acquire big data and utilize it within the organizations as well as business partners and third parties, i.e. government agencies and commercial data aggregators (Yu et al.,2020). Data can be converted into useful insights and intelligence through the use of big data and processed at different levels of an organization. It has been shown by anecdotal evidence that business models and strategies can be transformed through big data for improving

product development, marketing, operations, human resources, and other critical business functions. Advancements have been made in informational technologies and analytical techniques to support companies for capitalizing on big data (Throne & Lăzăroiu,2020). The use of big data analytics by organizations has been examined by this research. It is defined as the process of adopting the latest technologies for determining big data to explore useful knowledge and insights for effective decision-making related to different business processes. The companies may become able to explore the hidden patterns and correlations in the data acquired from different sources (Kamble & Gunasekaran,2020). It has been indicated by a recent industry survey that most organizations have not started capitalizing on big data irrespective of the success of 'big data first movers' (Oncioiu et al.,2019). Most of the organizations are still in the learning stage about the big data value, analytical skills, information technology, and risks involved in its adoption (Raguseo et al.,2020). Thus, the important processes resulting in the use of BDA by an organization and performance outcomes must be closely investigated.

At the individual level, there is extensive literature available on the adoption of IT (Talwar et al.,2020). There are a limited number of studies based on the adoption behavior of organizations for a technology irrespective of the understanding of big data analytics in the management of the supply chain (Ghasemaghaei & Calic,2020). Moreover, the adoption intentions have not been focused on by the existing studies related to IT adoption among organizations (Dubey et al.,2020). These studies have not focused on the post-adoption behaviors of organizations, i.e. value creation and usage (Maheshwari et al.,2020). Moreover, there is a need for understanding the potential performance impacts of developing BDA competencies by the managers for comprehending the factors behind the adoption of BDA. There is information related to the adoption of BDA in specific areas such as CRM (customer relationship management) and marketing (Belhadi, et al.,2020). There is a need for advancing a holistic view of BDA and related capabilities.

CONCEPTUAL FRAMEWORK

Big data is comprised of huge datasets with high variety, high velocity, and high volume. It is referred to as large-scale data including text, video, numerical content. It requires cost-effective and innovative processing of information for increased insights to make decisions (Raut et al.,2020). There has been an increase in big data analytics to potential prominence because of enhanced ability to capture large amounts of data and adopting strong analytical techniques. Increase in technological developments including the internet of things and social networks, information is developed every time every day (Wamba, et al.,2020). Big data is comprised of 3Vs, i.e., high degree of volume, variety, and velocity in comparison with the traditional data. Big data analytics is a technique, which involves the management, analysis, and processing of data for obtaining useful insights within the big data. It was claimed by Su et al. (2020) that organizational capabilities can be improved by BDA in terms of performance or competitive advantage.

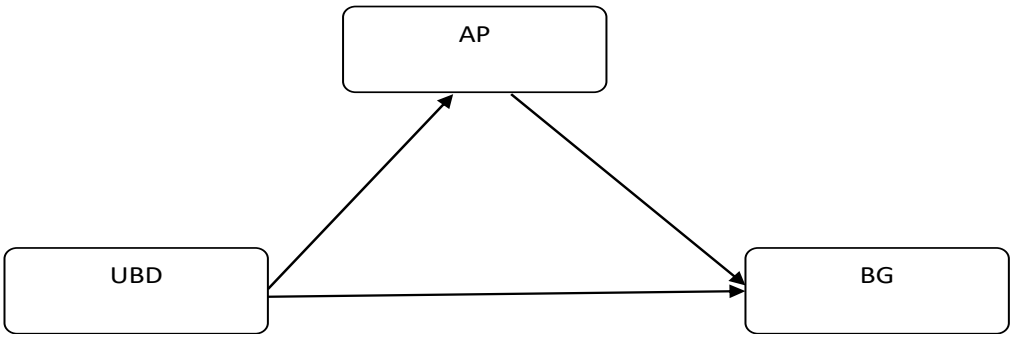

Figure 1.
Conceptual Framework

Literature studies have explored those big data analytics is being used by companies for customer relationship management and operational efficiency. This can in turn improve organizational productivity and outcomes. Both practitioners and researchers have given high attention to BDA (Sahoo, 2020). In accordance with the use of BDA in different aspects, there can be two categorizations, i.e., routine use of BDA and ad hoc use. Routine use refers to the use of BDA by an organization for managing and carrying out different business operations. However, the ad hoc use of BDA is related to the structural and unstructured data in BDA when there come some unplanned needs. This study will focus on BDA use in routine, as it is more appropriate for structural tasks within an organization. It has been argued that the ad hoc use of BDA is crucial, as the ad hoc use is required by businesses for dealing with unexpected changes in the external environment. Therefore, both types of BDA uses have been considered in this research study.

Asset Productivity and Business Growth

It has been noted earlier those dynamic capabilities functioning is expected to be common as the BDA technologies, which can be acquired in an open market. Thus, capabilities alone cannot result in competitive advantage without resource configuration that is created by capabilities (Yu et al.,2020). New resource configurations can be developed by dynamic capabilities based on the opportunity logic in pursuit of continual temporary benefits. Resource configurations possessing competitive advantage can be created by the use of dynamic capabilities in a faster way as compared with competitors. One of the temporary benefits is asset productivity in the supply chain. The primary measure for determining the performance of a supply chain is referred to as asset productivity. It is the level of a business using current and fixed assets in a productive way. The current assets comprise inventory and cash while fixed assets include property, plant, and equipment. Asset productivity can be reflected through turnover rate and profitability. According to the perspective of dynamic capabilities, the use of BDA can be viewed as a way of developing information processing capabilities by an organization. These capabilities can enable an organization in combining and interpreting information acquired from different sources and using it for effective decision-making within supply chain functional departments Amankwah-Amoah & Adomako,2019). Uncertainties related to supply availability, capacities, and demands can be reduced by insights developed from BDA. There is a need for asset-intensive buffers that are experienced, including inventory, cash, and excess capacity (Dicuonzo

et al.,2019). Uncertainty can be dealt with using these assets, which act as hedges. It is expected that the use of BDA enables an organization in developing robust and accurate resource configurations to proactively forecast the future requirements of resources.

'Information replaces inventory' is a common phrase used in supply chain management (Novak et al.,2020). It can be extended to other stocks of safety, which are created to cope with dynamics and uncertainties in demand and supply, i.e. PRESTON, cash 12 CHEN, planned underutilization of equipment. In a similar way, it is suggested that BDA can result in the development of insights, which bring opportunities for reconfiguration of resources for alignment with the changes in demand and supply. Information processing can be done faster and accurately through BDA, which may result in precise forecasting. Asset managers can get a notice in advance to change the asset resources up or down (Shabbir & Gardezi,2020). Thus, BDA can provide useful insights, which can result in effective utilization of assets with time. Moreover, the use of BDA extensively in different areas of SCM can improve learning within and across the organization. The relationship between a firm and its partners with the supply chain can be enhanced as well (Throne & Lăzăroiu, 2020). Data analysis that describes delivery patterns and procurement can result in the maximization of transportation resources. This can make effective use of transportation resources. Similarly, the use of production assets can be done optimally through production schedules (Kamble & Gunasekaran,2020). Organizations can experience high turnover rates on assets and other indicators through such improvements. Therefore, the following hypothesis has been developed:

Hypothesis 1: There is a positive association between big data analytics and asset productivity.

The significance of BDA has been evaluated for the growth opportunities of an organization. In a dynamic market, the growth of a business is a function of its capability to create various temporary advantages. It is hard to achieve a competitive advantage for the long term through an increase in existing resource configurations (Shah, 2020; Nuseir et al.,2020; Yan et al.,2020). New insights in different areas, such as marketing, inventory management, customer insights, operations, etc. can be obtained through the use of BDA, which can improve the organizational innovation opportunity to develop different temporary advantages within its supply chain management. For instance, POS (point on sale) analysis can result in attractive service offerings for specific segments of a market. In a similar way, opportunities can be created by analyzing shipping and inventory data to reduce lead time and improve product availability, which may result in better sales. It has been revealed by the existing literature that improvements in supply chain processes are created by extracting insights from operational data. It was demonstrated by Alzoubi et al. (2020) that demand, and inventory data analysis is linked with higher responsiveness within the supply chain by managers. By use of information processing capability, organizations can increase their anticipation ability and utilization of emerging opportunities for businesses (Sengar,2020). Moreover, it has been pointed by several research studies that higher processing capabilities and information visibility can result in greater responsiveness of the supply chain (Kayikci et al.,2020). Therefore, managers can become alert to exploit opportunities through such capabilities for achieving business growth. Thus, the following research hypothesis has been developed:

Hypothesis 2: The use of big data analytics is positively linked with the growth of a business.

Hypothesis 3: asset productivity mediates between big data analytics growth of a business.

RESEARCH METHODOLOGY

A total of 480 questionnaires were delivered to participants in order to perform this study utilizing a survey-based methodology. The sample population for the study consisted of Asia's corporate marketing department specialists. In-person and online questionnaires including a total of 265 questions were distributed to respondents. The survey questions were designed in a specific method to assess the impact of management's big data analytical skills on asset productivity and the growth of corporate marketing firms. The poll comprised both open-ended and closed-ended questions, with each segment focusing on a distinct component of management's big data analytical skills, asset productivity, corporate expansion, and the interaction between these factors. The examination consisted of multiple-choice questions. In light of this, we employed closed-ended questions to determine how respondents felt about their own managerial big data analytic competencies, asset productivity, and firm growth. These questions consisted of rating scales and multiple-choice questions, both of which were straightforward to reply to and evaluate. Utilizing free-form questions, we were able to learn more about the respondents' past and future encounters with big data analytics and how they anticipate it will affect asset productivity and business performance. The statistical software used to evaluate the survey data included a capability for regression analysis. In this study, we discovered that analytical skills in big data management have a substantial impact on asset productivity and corporate growth. The study's results can be believed because 480 people filled out the survey. The number of responders was sufficient to represent the marketing departments of Asian firms as a whole. Using a survey was the most efficient way for investigating how managerial big data analytical competencies affect asset productivity and the growth of corporate marketing organizations in Asia.

RESULTS

For the purposes of PLS-SEM, the term "outer loadings" is utilized (PLS-SEM). This phrase is used while describing the correlations between observable and latent variables to characterize the regression coefficients. These outer loadings serve a vital role in the PLS-SEM model, enabling more accurate estimation of the structural equations and a better understanding of the causal effect of latent variables on observable variables (Putra, 2020; Basheer et al.,2020; Raoof et al.,2020). Greater outer loading values suggest a more significant link between the latent and observable variables. Table 1 demonstrates that the size of the outer loadings can be utilized to identify the model's most influential predictors.

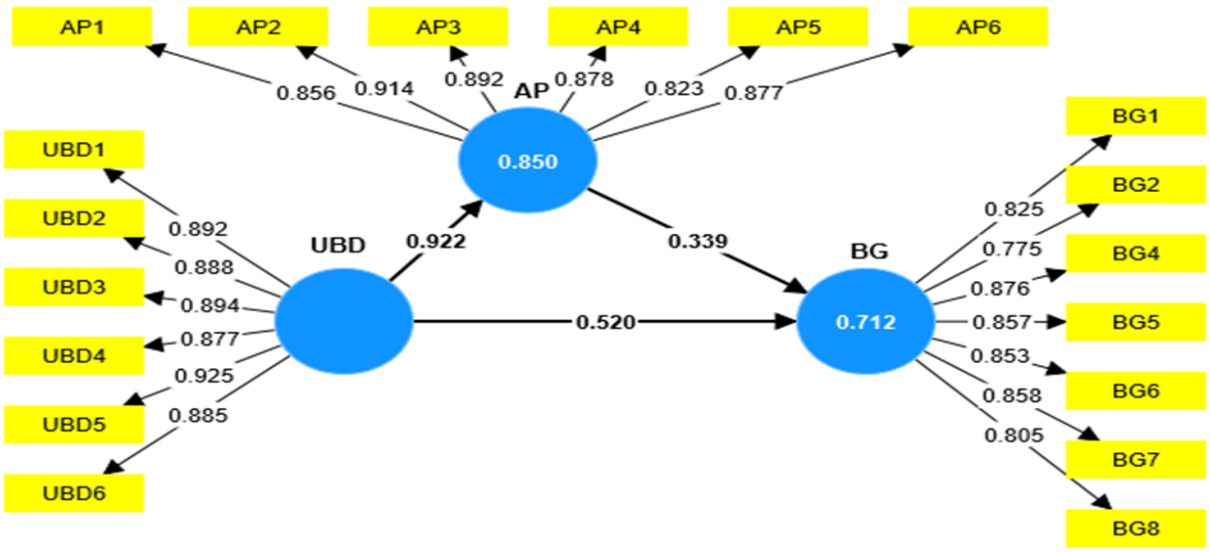

Figure 2.
Measurement Model

Table 1.
Outer Loadings

	AP	BG	UBD
AP1	0.856		
AP2	0.914		
AP3	0.892		
AP4	0.878		
AP5	0.823		
AP6	0.877		
BG1		0.825	
BG2		0.775	
BG4		0.876	
BG5		0.857	
BG6		0.853	
BG7		0.858	
BG8		0.805	
UBD1			0.892
UBD2			0.888
UBD3			0.894
UBD4			0.877
UBD5			0.925
UBD6			0.885

One of the most important processes in Structural Equation Modeling (SEM) utilizing Partial Least Squares is a reliability study, which determines the measurement model's consistency and stability. One of the most crucial tasks, this will disclose how trustworthy the model is (PLS) (PLS). Latent-observable correlations are addressed for the PLS-measurement SEM's model, which increases the model's prediction power. While

analyzing the PLS-reliability, the Composite Reliability (CR) or Average Variance Extracted (AVE) approaches of SEM are generally employed (Reyna-Castillo et al.,2020; Abdulmuhsin et al.,2020; Asada et al.,2020). Using the Composite Reliability (CR) statistic, which is defined as the mean of the squared factor loadings, one can evaluate the dependability of a latent variable. AVE can also be used to assess the dependability of latent components concealed within observable variables that account for a portion of the overall variance. For the PLS-SEM model to remain credible and for the study to yield trustworthy results, these predictable characteristics are required. The CR and AVE for the latent variables utilised in this investigation may be found in Table 3 of the aforementioned research. The reliability of these values for the latent variables is satisfactory.

Table 2.
Reliability Analysis

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
AP	0.938	0.939	0.951	0.764
BG	0.929	0.937	0.942	0.699
UBD	0.949	0.950	0.960	0.799

The discriminant validity of this investigation is outlined in Table 3, which can be seen here.

A test of discriminant validity must be undertaken to ensure that there is no association between the variables under investigation. In the present study, this analysis was conducted utilizing the Fornell and Larker approach. The bolded loadings for each construct had greater absolute values than the loadings for the other constructs, as shown in Table 3, which summarizes the research findings. This suggests that each variable has a high level of discriminant validity. The results from the tables used to analyze convergent validity, reliability, and discriminant validity imply that the data gathered from the study is credible and valid.

Table 3.
Discriminant validity

	AP	BG	UBD
AP	0.874		
BG	0.819	0.836	
UBD	0.822	0.833	0.894

We relied on the structural model to validate the estimated hypothesis and confirm that it was accurate. Each variable is represented by its own unique latent independent variable.

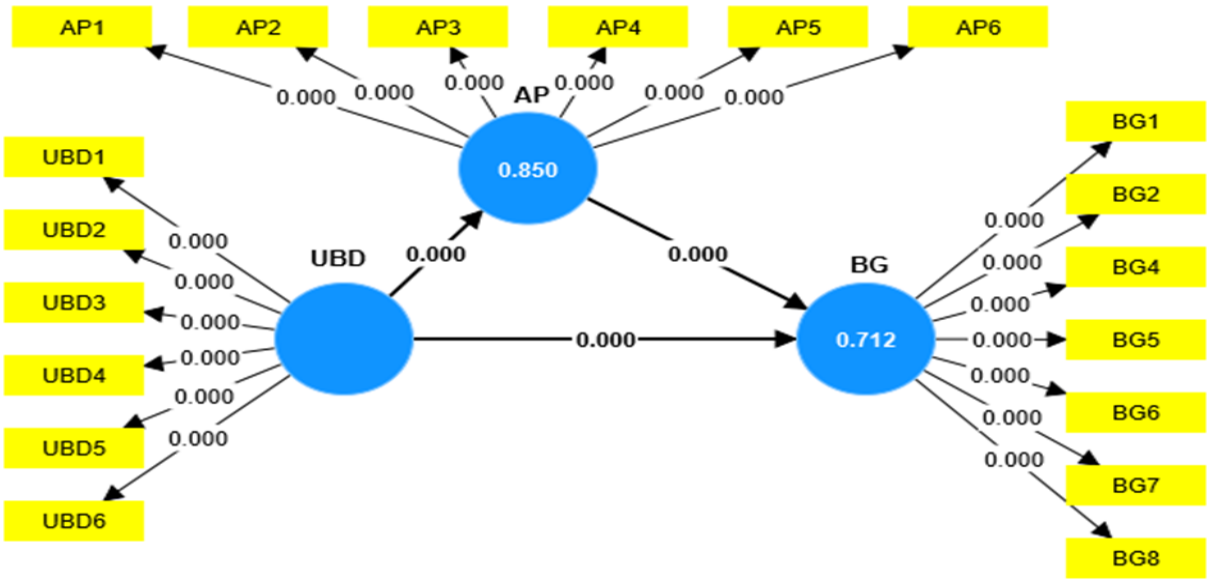

Figure 3.
Structural Model

In structural equation modeling (SEM), partial least squares (PLS) is a method that helps build a model of the data's underlying causal structure. With this model, we are able to get conclusions regarding the dynamics of a number of different components (Chin et al.,2020). It is possible to find connections between variables that were not known to exist before utilizing this strategy. The entire process, which draws from a number of research approaches, is referred to as "structural modeling," and its name describes this concept. Constructing the PLS-SEM structural model is impossible if one does not first derive a set of structural equations from the measurement model. After that, you can use these equations to get a close approximation of the external loadings. This method must be carried out a great number of times before the modeling task can be considered finished. By combining the results of earlier observations with the information provided by this model, it is possible to generate predictions and put hypotheses on the connections between latent variables to the test. The findings of the investigation are outlined in Table 4, which demonstrate that it is possible to accept all of the hypotheses with a high level of assurance.

Table 4.
Direct Results

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
AP -> BG	0.339	0.345	0.087	3.920	0.000
UBD -> AP	0.922	0.922	0.015	61.076	0.000
UBD -> BG	0.833	0.836	0.029	28.893	0.000

The results of the mediation inquiry are shown below in Table 5, which demonstrates that the mediation path is statistically significant.

Table 5: Mediation Analysis

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values

BDAC -> END -> SCP	0.513	0.513	0.075	6.836	0.000

DISCUSSION

The primary objective of the study was to determine how big data analytical skills in management impact asset productivity and company growth for Asian corporate marketing firms (Olabode et al.,2020). The results indicate that the ability of management to interpret large data sets has a favorable impact on both asset productivity and organizational growth. These results also suggest that Asia-based corporate marketing organizations that apply big data analytics may see increased business growth and asset productivity. The findings of this study are consistent with earlier studies in the same subject. According to the findings of these research, the use of big data analytics can boost corporate performance by assisting organizations in making more informed decisions and identifying possibilities (Dubey et al.,2020). In addition, the results of the study highlight the importance of managerial expertise in making efficient use of big data analytics. These findings may have far-reaching ramifications for Asian corporate marketing organizations, which can increase their efficiency by investing in the growth of managerial skills in big data analytics.

The report also emphasizes the relevance of teaching and training managers on the value of big data analytics (Belhadi et al.,2020). Corporate marketing organizations in Asia must invest in training and development programs to equip their managers with the essential skills for big data analytics.

CONCLUSION

The purpose of this study was to emphasize the significance of management big data analytic abilities in boosting asset productivity and company growth for Asian corporations engaged in corporate marketing. In conclusion, the findings of this study illustrate how important it is to possess the skills necessary to analyze massive amounts of data. According to the findings of the study, big data analytics has the potential to improve a company's bottom line; but, in order to achieve this goal, management needs to be provided with adequate training resources. The findings of this research on the significance of big data analytics and the cultivation of management skills in corporate marketing have the potential to assist Asian organizations in becoming more competitive in their respective regional markets. The findings of this study, therefore, provide information that is valuable in this regard. The findings of the research can also assist managers in more successfully leveraging big data analytics in the decision-making processes of their organizations. The findings can be put to use in order to accomplish this goal. It is necessary to conduct additional study in order to have a better understanding of the connection that exists between management competencies in big data analytics and other performance metrics, such as the satisfaction of customers and the amount of financial gain. Research that has not been carried out could evaluate how effective various training and development programs are at improving managerial capabilities in the field of big data analytics.

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