Technology Characteristics Effect toward Business Intelligence in Multinational Corporation

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Abstract: Business Intelligence (BI) are the arrangement of methodologies, procedures, applications, information, items, advances and specialized designs which are utilized to bolster the accumulation, examination, presentation and dispersal of business data. BI advancements give verifiable, present and prescient perspectives of business operations. Normal elements of business insight innovations are reporting, online investigative preparing, examination, information mining, handle mining, complex occasion handling, business execution administration, benchmarking, content mining, prescient examination and prescriptive examination and are fit for taking care of a lot of organized and here and there unstructured information to distinguish, create and generally make new key business openings. The frameworks that support BI arrangements are altogether different from different in the organization. All around composed BI frameworks are versatile by nature; they constantly change to answer new and distinctive business questions. What's more, the most ideal approach to adjust successfully is to begin little and develop naturally. Each new addition refines and expands the arrangement, changing in accordance with client input and new necessities. Like a sprawling redwood woodland, the best BI arrangements take years to develop, extending in breadth and profundity after some time. It is no fortuitous event that the estimation of a BI arrangement grows exponentially with the quantity of clients and applications it supports.

This study adopts DOI theory as a theoretical basis firstly because it is a well-established theory and is widely used in information technology diffusion-related research. Very limited research has been pointed at detecting foundations of innovation and the incorporation of innovation insights from a knowledge-based standpoint, particularly BI systems.

This review will include quantitative techniques to examine components impelling the selection of business intelligence and decision support applications. This study focused on ERP user in Multinational Corporations in Malaysia. The quantitative data that gained from the questionnaire are analyzed by using different analytical techniques. The analysis of data in this study was by using the Smart PLS3. The methods of data analysis are selected based on the research questions and the variable characteristics.

Keyword: Business Intelligence, Diffusion of Innovation, decision support system, Information System, Organizational Characteristics

1. Introduction

Shrewd organizations in the 21st century utilize business intelligence (BI) answers for pick up a clearer photo of their inner operations, clients, store network, and budgetary execution. They likewise determine huge ROI by utilizing BI to devise better strategies and arrangements, react all the more viably to crises, and underwrite all the more rapidly on new open doors. To put it plainly, they are utilizing BI to wind up distinctly shrewd about the way they work together. BI is a journey and not a transient venture. Numerous a circumstances, associations free sight and certainty of the first goals. The best approach to conquer this is to begin little and grow with this gauge. In the meantime, endeavor to gauge and track any arrival of speculation and advantages that is gotten from BI. The reasonable exhibit of achievement conveys confidence to advance while loses shows open doors for upgrades. Technology have pivotal part to take care of the issues that are confronted by associations to adapt to the present difficulties. In this light, it can be asserted that fruitful data frameworks recognize by specific qualities or measurements [1].

Amid the previous ten years, the way to deal with administration business has changed in the entire world and associations get to be distinctly capable crosswise over learning, information change, and demonstrating the right data and learning. Business insight joins as a key system for any association to accomplish an upper hand [2]. It is contended that BI applications have ability to
examine immense measure of information and give better and speedier reactions to organizations [3].

Technology may in this manner be viewed as effective in the event that it meets criteria, for example, satisfying client needs and authoritative goals. In the meantime, a scope of variables may influence systems amid their advancement and usage. In any case, it appears that the assessment of a framework regarding its prosperity is normally confused wonders [4]. Estimation of Technology achievement has dependably gotten real significance among scientists. However, assessment of fulfillment, likewise evaluation of the capacities of the built framework relies on upon different terms, for example, systems execution, viability, quality, utilize and clients' fulfillment.

2. Diffusion of Innovation Theory

DOI was created by Rogers, at the year of 1983 with the underlying point of portraying the components that effect the procedure of innovation diffusion and adoption. This theory places that potential adopters assess an advancement in view of their discernments, and will settle on a choice to acknowledge the development on the off chance that they see that it displays at least one of five general elements, being relative preferred standpoint, many-sided quality, similarity, trial capacity and recognizability. Of these elements, relative preferred standpoint, intricacy and similarity have given the most predictable clarification to the adoption of ISs [5].

As indicated by the audit of writing [6], DOI has been the regularly referred to work managing development appropriation, as can be seen in various reviews. Notwithstanding, DOI has been scrutinized as it is one-sided towards the mechanical segment of the selection procedure [7]. Notwithstanding when mechanical predominance is guaranteed, it doesn't ensure the reception of IT advancement by associations. This is on the grounds that other social, hierarchical and singular components may affect IT reception [8].

3. Methodology

This exploration extensively discourses subject of why an association receives or deliberates not implementing Business Intelligence and Decision Support Application. Thus, the research process designed to achieve the aims and answer the questions was conducted in quantitative method using structured, closed item surveys. The unit of analysis is organization, and sample will consider the viewpoints of key organizational informants, including senior and mid-level executives from both the business and technological part of the organization. The target population comprised of ICT personnel in Multinational Corporations in Malaysia. The choice of ICT departments in this organization owes to their familiarity with the subject of the proposed study. Simple random sampling [9] will be used this research study. Simple random sample is chosen from a larger set of a population. A simple random sample is a subset of a statistical population in which each member of the subset has an equal probability of being chosen. A simple random sample is meant to be an unbiased representation of a group. There was a total sampling of approximately 280 Multinational Corporation in Malaysia.

Data analysis for this quantitative phase of the research was done using the SEM approach. PLS path modeling becomes more appropriate for real world applications and more advantageous to use when models are complex [10]. The soft modeling assumptions of PLS technique (i.e., ability to flexibly develop and validate complex models) gives it the advantage of estimating large complex models [11]. Measurement model was used to explain or assess constructs’ reliability and validity of the current study. Secondly, structural model was used to conduct bivariate correlation analysis and simultaneous regressions analyses to establish correlations, and relationship effects among constructs under investigation. Additionally, using the PLS mechanisms of algorithm and bootstrapping to examine the moderating effects. Partial least squares (PLS) is now well-known as the alternative to SEM method – this includes AMOS, LISREL, and other programs [12].

4. Finding

The purpose of this study is to investigate the relationships among latent variables; therefore the latent analysis technique was the suitable option. Total of 162 surveys were complete and returned and additionally decidedly usable giving a reasonably worthy rate.

In this way, the example scope of 162 for the review was remain adequate to execute different measurable assessments and give dependable yield with arrangement [13]. Polls were circulated to ERP client (figure 1 and figure 2) associations viewing in Multinational Corporation in Malaysia that were very different.
Discriminant validity evaluation has turned into a for the most part acknowledged essential for investigating connections between dormant factors. For difference based auxiliary condition demonstrating, for example, halfway slightest squares, the Fornell-Larcker paradigm and the examination of cross-loadings are the predominant methodologies for assessing discriminant legitimacy.

By method for a reenactment contemplate, we demonstrate that these methodologies don't dependably recognize the absence of discriminant legitimacy in like manner research circumstances. Therefore researcher propose an alternative approach, based on the multitrait-multimethod matrix, to assess discriminant validity: the Heterotrait-Monotrait ratio of correlations. These results are reported in the table 3.

As illustrated in Figure 3, Technology Characteristics (TECH) as a latent construct was measured by a set of measured variables namely System Compatibility (SCOM), Perceived Benefits (BEN) and Task Complexity (CPX). The second-order factor structure has two layers of latent variables. In this study as example, System Compatibility (SCOM), Perceived Benefits (BEN) and Task Complexity (CPX) are called a second-order constructs as they caused multiple first order latent factors (Hair et al., 2010). As illustrated in Figure 4, in this study, the second-order latent constructs is Technology Characteristics (TECH).

Before testing the research model, the procedures were to examine of whether the first order construct were qualified to be conceptually explained by the respective second-order construct. Therefore, the first-order constructs should be explained well by the hypothesized second-order construct and they should be distinct [14]. These results are reported in the table 4.

### Table 1: Respondent Profiles organizations by sorts of businesses

<table>
<thead>
<tr>
<th>Main types of Industries</th>
<th>Number of Questionnaires</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Received</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>94</td>
</tr>
<tr>
<td>Servicing</td>
<td>53</td>
</tr>
<tr>
<td>Others</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>162</td>
</tr>
</tbody>
</table>

This examination embraced internal consistency reliability. This sort of unwavering quality is utilized to survey a scale whereby a few things are summed to frame an aggregate mark to be develop [13]. Subsequently, the interior reliability unwavering quality was legitimate correlation information of this review in the survey questionnaire. The Survey questionnaire are in the pattern of a Likert scale.

To guarantee that the instrument created delivered exactly and precisely regarding estimations, Cronbach’s coefficient alpha was chosen as a proper factual test for evaluating the dependability and legitimacy of the survey questionnaire. These results are reported in the table 2.

### Table 2: Cronbach’s Alphas, rho_A, Composite Reliability and Average Variance Extracted (AVE) in the main survey

<table>
<thead>
<tr>
<th>Measurement Items</th>
<th>Cronbach's Alpha</th>
<th>rho_A</th>
<th>Composite Reliability</th>
<th>(AVE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Innovation Factors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compatibility</td>
<td>5</td>
<td>0.968</td>
<td>0.969</td>
<td>0.972</td>
</tr>
<tr>
<td>Perceived Benefits</td>
<td>4</td>
<td>0.958</td>
<td>0.940</td>
<td>0.956</td>
</tr>
<tr>
<td>Complexity</td>
<td>4</td>
<td>0.958</td>
<td>0.958</td>
<td>0.968</td>
</tr>
</tbody>
</table>
Once the goodness of the outer model has been confirmed, the next stage was to test the hypothesized relationships among the variables. By running PLS Algorithm (figure 5) and bootstrapping (figure 6) using SmartPLS, the hypothesized model was tested.

For the purpose of concluding whether the path coefficients are statistically significant or not, bootstrapping techniques embedded in this study with SmartPLS 3. As reported in table 5, the T-Values with each path coefficient were generated using bootstrapping technique and P-Values subsequently were generated.

The results showed that Technology Characteristics (TECH) has significant effect on the adoption of Business Intelligence and Decisions Support Application ($\beta = 3.407$, $t=3.369$, $p<0.05$). Therefore, the hypothesis of the effect of Technology Characteristics (TECH) on Business Intelligence and Decisions Support Application was supported. From the PLS model, it has been exactly and hypothetically found that the best miserly model was accomplished with no changes [15]. The basic model was in this way acknowledged as the final model.

The finding proposed that organizational factors including top management support and organizational size show critical components that impact the reception of Business Intelligence and Decision Support Application. What's more, it was found that organizational factors variables were imperative elements influencing to Business
Intelligence and Decision Support Application adoption at a critical level of 0.05.

In this study, the aftereffects of hypotheses testing research address as real discoveries are presented. In this section, the research questions below can be answered by testing hypotheses.

**Research Question:** What is the relationship between Technology Characteristics and The Adoption of Business Intelligence & Decision Support?

**Hypotheses:** There is a positive relationship between Technology Characteristics and The Adoption of Business Intelligence & Decision Support Applications.

5. **Theory and Practices Implications**

This review contributes new information to the exploration writing and for different specialists. Additionally, the discoveries of this review can be used as a rule for future review that is planned to explore the phenomenon in other Asia Pacific settings. Furthermore, specifically the discoveries of this review have likewise validated the theory that technological innovation adoption, as it is broadly connected in different businesses in American or European nations, is pertinent with regards to an ERP viewpoint. In this way, it is normal that researchers in the fields of IT/IS/ICTs will utilize the proposed model and the critical factors of this review and test them in possibly different circumstances.

6. **Limitations and Extensions**

Significance of any examination is to understand its impediments [16]. This study makes a commitment to the level of advancement appropriation writing, however despite the fact that this review has given pertinent and intriguing bits of knowledge into the reception of Business Intelligence and Decision Support Application in an ERP point of view, it is vital to perceive its restrictions. There are a few constraints that should be recognized [17]. Information technology has changed quickly. The introducing information identifying with IT and decision support methods were at first gathered in 2007.

The selection profile is probably not going to be the same if the investigation of the Business Intelligence and Decision Support Application innovation was led today. This is on the grounds that dissemination of Business Intelligence and Decision Support Application in ERP point of view is proceeding. Hence, future research could reproduce this review to decide the rate of dispersion of the utilization of Business Intelligence and Decision Support Application. Another essential impediment of this postulation is identified with the criteria utilized as a part of selecting the population outline as the example of this research.

ERP current clients have been incorporated as samplings for the study, notwithstanding, just Multinational Corporation in Malaysia were chosen as a reasonable gathering for gathering information and performing analysis because of the constrained time allotment. This moderately little measure of test information may lessen the force of the factual test as the specimen utilized for examination for levels of utilizing Business Intelligence and Decision Support Application drawn from the chose ERP population was generally little. Future research, accordingly, can likewise develop the present review utilizing tests of ERP clients with other gathering of association or different nations with varying situations.

7. **Conclusion**

Aftereffects of this study propose that the selection of Business Intelligence and Decision Support Application in an ERP point of view can be allotted through the utilization of innovation factors. In concurrence, [18] this review found that the appropriation viewpoint is valuable to assess the qualities of an association that make it open to advancement and change. Moreover, examines utilizing the dissemination point of view endeavor to comprehend why and how an advancement spreads and what qualities of the innovation prompt to across the board acknowledgment. After an association has received an advancement, utilization of the development needs to spread inside it for the innovation to give its full advantages.

8. **Recommendation for Further Research**

Aside from the confines of the review, this examination likewise gives a chance to future research. Despite the fact that this exploration has built up an effective innovation selection display identifying with choice support, numerous productive ranges for future research remain.

Given that the consequences of this proposition are constrained to Multinational Corporation of Malaysian ERP points of view, discoveries could be distinctive when other social gatherings are considered. The examination models were created in light of little example bunches with particular ERP viewpoints. This recommends a requirement for more culturally diverse research to distinguish whether other development adopters act similarly, or
whether there are any issues raised about IT reception. Subsequently, the proposed model of advancement selection for Business Intelligence and Decision Support Application should be tried in various sorts of associations and distinctive gatherings of respondents to affirm the aftereffects of this research.

9. Summary

This review concentrated on the utilization of Business Intelligence and Decision Support Application in ERP client of Multinational Corporation in Malaysia. Such a helpful theoretical model for the effective appropriation of Business Intelligence and Decision Support Application, these exploration models have been grounded by at first utilizing Rogers' model of development dissemination. This study extended the Rogers' model to the confirmation setting of Business Intelligence and Decision Support Application reception by applying to authoritative appropriation in the Rogers' model by proposing that the exploration models have been intended to quicken dissemination of a data innovation of Business Intelligence and Decision Support Application are connected decidedly to its rate of selection. Accordingly, the Rogers' model of development dissemination has been valuable for the study of Business Intelligence and Decision Support Application appropriation.

10. References


