MANAGEMENT CHALLENGES IN CREATING VALUES OF LEARNING ANALYTICS: A HIGHER EDUCATION INSTITUTION PERSPECTIVE

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ABSTRACT

To ensure success in the implementation of Learning Analytics (LA) from the perspective of higher education institutions (HEIs), this paper aims to look at the management challenges in creating values of LA in higher education institutions in Malaysia. Dramatic shifts and changes are immensely reflected in the landscape of higher education in the 21st century. Globalization, technology innovation, and data-driven decision-making are creating new demands and opportunities. The effective use of data in LA is a critical component of a digital learning strategy to personalize instruction for students particularly to increase students' achievement in the tertiary level. Although applications of LA are in the stage of infancy in Malaysia, its presence is being felt, and it should not be ignored. This study utilized an interpretive paradigm and made use of semi-structured interviews with three respondents in a higher education institution. The findings from the thematic analysis show the strategic solutions for creating values in LA as illustrated in a hybridization framework rendering the following themes: trends and benefits; people, culture, infrastructural support, and data management; and strategic directions. Key issues remain at how far top management is willing to invest to embrace technology as financial issues continue to be one of the most important factors. Above all, this study can be used to guide LA implementation at HEIs in Malaysia, and hopefully the hybridization framework can be used to pave the way for a successful LA initiative.

Keywords: Learning Analytics, Teaching and Learning, Institutional Capacity, Higher Education.

INTRODUCTION

Globalization, technology innovation, and data-driven decision-making are creating new demands and opportunities in higher education institutions. Every time students interact with their instructors, go to the library, and log into their online portal, they leave behind a digital footprint. According to Sclater, Peasgood, and Mullan (2016), Learning Analytics (LA) is basically the process of using data to improve tracking students' information and their behavior by quantifiably providing feedback to both instructors and students at a program level. This has become a new phenomenon in reflection in terms of technology integration that has led many Higher Education Institutions (HEIs) today to prepare their students for lifelong learning in a world filled with complex uncertainties by updating teaching and learning processes and by ensuring that students are equipped with the right knowledge, skills, and attitudes (Organisation for Economic Co-operation and Development, 2017). Thus, effective use of data and LA are critical components of a digital learning strategy to personalize instruction and further improve higher education students' attributes.

Research Problem

As compared to traditional student learning experience, the utilization of LA for instance is at a relatively early stage of development in Malaysia (Tasir, Kew, West, Abdullah, & Toohey, 2016). There is a convincing body of evidence that helps to develop more student-focused provisions in higher education, of which data and tools can be used for continuous improvement. Policy that supports the core of the framework allows practitioners to deliver promises leading to sustainable practices for entrepreneurship for future opportunities, which include progression towards sustainable assurance in quality excellence and benchmarking (Tasir et al., 2016). Although applications of LA are still at its infancy in Malaysia, there are a few studies which examine the significant contributions of LA directly or indirectly to higher education in Malaysia, especially in terms of management. As noted by Tasir et al. (2016), academic managers highlighted the lack of consistency in implementing LA initiatives. To ensure the success of LA implementation, this paper aims to explore the management challenges in creating values of LA.

The Malaysian government, through the MOE, has restructured the higher education ecosystem to enable it to respond to the need for nation building in accordance with Malaysia's Vision 2020 (Grapragasem, Krishnan, & Mansor, 2014). In order to intensify higher education consolidation as an international and regional hub of academic and educational excellence, the Malaysian Higher Education Blueprint (MHEB) 2015-2025 developed a roadmap as shown in Figure 1 below:
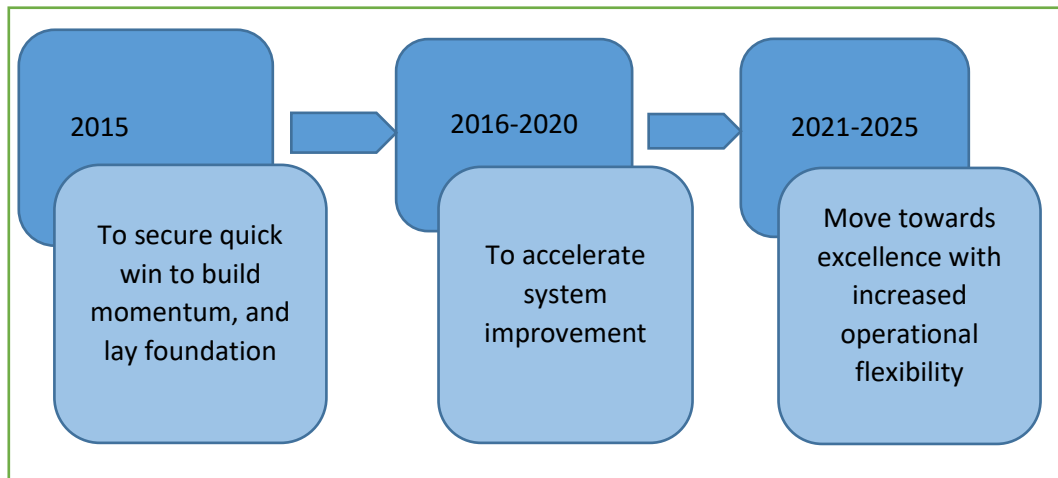

Figure 1. Three Implementation Waves of MHEB 2015 -2025

The Figure 1 indicates the three waves of activities to ensure system capacity, capability, and readiness built on the basis of five aspirations namely access, quality, equity, unity, and efficiency, which could be addressed by improved data management through LA (Mohd Zain, Aspah, Mohmud, Abdullah, & Ebrahimi, 2017).

Considering the context of Malaysian higher education, a conceptual framework with three main components of Impact, Domain and Value creation and the sub-components of management challenges, organizational and technical perspectives and Learning Analytics and its implementation, guided this study to explore the findings (see Figure 2).
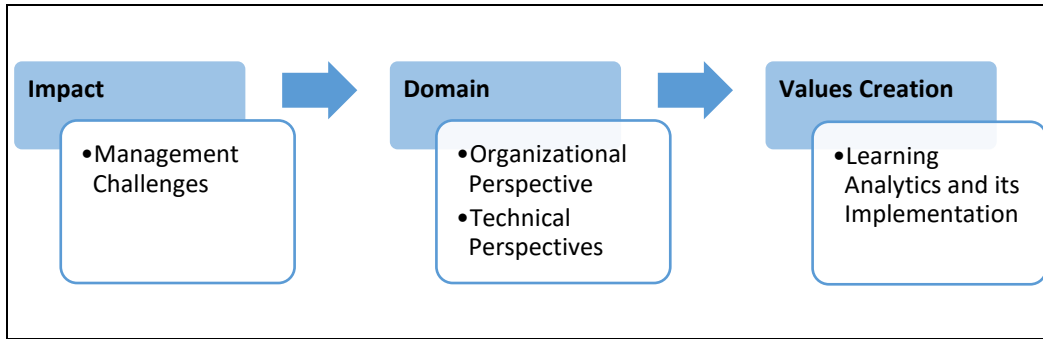
Figure 2. Conceptual Framework

Therefore, this paper aims to find out the management challenges in creating values of LA from an organizational perspective. Educators and administrators require further contextual information in driving LA programs, especially to those who are directly accountable in the knowledge creation process and student learning by responding to the changing needs of the society through an in-depth introspection (Mohd Zain et al., 2017). As such, the findings of this study will provide an overlay for future research as illustrated in the conceptual framework above.

LITERATURE REVIEW

Learning Analytics

According to Dziuban, Moskal, Cavanagh, and Watts (2012), analytics is the science of logical data analysis. In the field of education, the analytics of data can be applied with the main objective to predict students' success and to support instructors in knowing when and how to intervene in reducing risks for failure. Learning Analytics (LA) focuses on data from learner and their context that can be used to improve the learning process or the learning environment (Siemens & de Baker, 2012). As a result, instructors will be informed as to how to assist struggling students. In online or face to face learning, LA becomes an essential especially when Learning Management System (LMS) has become available to track data for stakeholders (Picciano, 2012; Reyes, 2015).

In recent years, LA has become a significant concern in higher education in the area of technology-enhanced learning and teaching. Many researchers have established various methods in implementing LA (Zilvinskis, Borden, Barefoot & Kinzie, 2017). Researchers are then urged to be clear and certain regarding what LA projects they want to implement based on the types of outcome expected. Nevertheless, the success and sustainability also vary critically depending on the resources or capacity needed to achieve quality assurance in higher education.

Since the field of LA is relatively new, a limited number of theories and models explain the impact and usage of available data to inform and to improve learning and teaching (Elias, 2011). Knight, Shum, and Littleton (2014) have put forward a triadic depiction of the relationship between the elements of theory and practice in the development of LA techniques. As shown in Figure 3, this Epistemology (E), Pedagogy (P) and Assessment (A) triad illustrates the relationship based on a theoretically grounded standpoint that exists in pedagogical and assessment practices and policies, as well as their underlying

epistemological implications and expectation, in order to provide a theoretical underpinning for the design and implementation of LA.
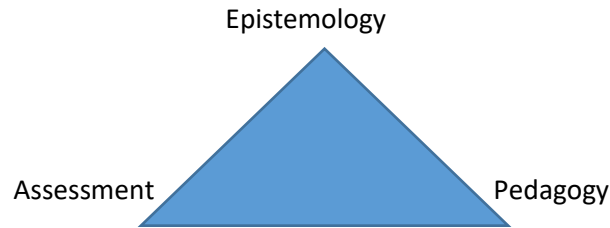

Figure 3. The Epistemology – Assessment – Pedagogy (EPA) triad (Knight et al., 2014, p.25)

LA, as a new form of learning tool supported by the EPA tried, potentially supports current educational practices. For example, LA has the potential to create opportunities for marginalized students who are weak in critical thinking skills so that alternative ways of engaging activities could be introduced instead. This fundamental assumption asserts that LA can be utilized as a significant tool in expressing commitment to a particular educational worldview designed to develop and nurture a particular type of learner (i.e. personalized learning).

The Role of Management

LA is an emerging technological practice and a multidisciplinary scientific discipline, in which the ultimate goal is to produce positive learning outcomes. Despite recent efforts as mentioned earlier, LA has not yet fully managed to redeem its promises (Ferguson & Clow 2017). As identified by Macfadyen, Dawson, Pardo, and Gašević (2014), there are shifts in culture, technological infrastructure, and teaching practices in HEIs from assessment for accountability to assessment for learning that cannot be achieved through piecemeal implementation of a new tool.

i) Organizational Perspective

A clear and non-overarching conceptualization of the benefits of LA towards improving quality assurance in higher education organizations is fundamental. Resistance to change and adaptability of the stakeholders towards LA also play a critical role in establishing a positive relationship in organizations. In line with this, Hussain et al. (2018) referred to Lewin's model to explain that in an organizational change process, leadership plays an important role. As such, leaders are responsible in coordinating employees, sharing knowledge, and giving opportunity in making decisions in an organizational level through positive relationship that integrates employees and leaders into one unit. As leadership for learning integrates features of models such as transformational and distributed leadership (Adams & Md Yusoff, 2019), further investigation on leadership for successful implementation of LA could also be explored especially in terms of learning and organizational culture. Hence, change factor is crucial for institutions to transform by adopting LA as a tool and reap its benefits for students, staff, and other stakeholders.

With regard to policy management, there were discrepancies in most institutions regarding how staff and leaders perceived the management of policies and practices. As per the issue of the ease of integration with existing organizational structures, Sclater et al. (2016) noted that many institutions agreed with the policy initiatives related to LA; however, they were uncertain as to how it could be implemented. Norris, Baer, Leonard, Pugliese, and Lefrere (2008) explained that due to the increasing accountability demand and increase in performance assessment, HEI leaders often seek to infuse as much as they can into the complex decision-making processes that include the planning and operation of the HEIs and programs. In effect, the deployment of LA projects through a substantial number of simultaneous strategies is indeed crucial.

ii) Technical Perspective

In addition to challenges at the organizational level, Sclater et al. (2016) also indicated the observed trends with respect to technical aspects such as data, infrastructure, and integration of system, which are very challenging to the management. For instance, faculties may have sufficient knowledge in academic analytics, but they may only have some knowledge in learning and predictive analysis. Besides, institutions may have limited integrated data in the current system as institutions expressed less interest to have collective information.

Data management is another critical challenge especially if the data are not in sync and have many complex purposes. Most of the time, departments are compliant with data protection policies; however, every department may interpret those policies in their own way. Moreover, Hoel, Griffiths, and Chen (2017) also commented that there is a gap between the concerns and obstacles of implementing LA ethically. Nevertheless, Adams, Raman Kutty, and Mohd Zaibidi (2017) noted that driving change in the midst of technology and knowledge-driven economy is indeed challenging as educational leaders face pressures where stakeholders require greater skills and resilience for sustainability particularly in Malaysia.

Integration with the existing infrastructure optimizes resources as explained by Wong (2017). However, it depends on the expertise of both the institution's technical team and their ability to comply toward certain universalized requirements in data management. Sclater et al. (2016) argued that if there are many inconsistencies in data collection, much work will be needed in this area. Certainly, while there are prospects for the implementation of LA, workload additions, resource allocation, and time management could be improved. Leadership responsibilities in organizations to direct resources and work effort in LA has been indicated as highly prioritized in overcoming technical hurdles.

METHODOLOGY

Research Design

A single case study was adopted to explore issues raised pertaining to the management challenges in creating values of LA within the context of higher education. The researchers used qualitative method by employing semi-structured interviews. The review of the research showed that adopting LA in learning and teaching in higher education is a relatively new undertaking in the education industry, and the impact or implication to all

stakeholders is evolving constantly. In addition, looking through the philosophical lens is an essential part of qualitative research; hence, social constructivism approach is most suitable in this study where reality and knowledge are socially and culturally constructed.

Sampling and Research Approach

A higher education institution in Kuala Lumpur, Malaysia was chosen as the site for this case study because this institution has been undergoing a corporate revolution by aiming to excel as an analytics-driven institution in terms of management, research, and student learning outcomes. Hence, the deployment of LA is part of the core framework of this academic organization. Looking at management challenges in this organization is indeed an important aspect so as to create maximum value of LA today and beyond.

Using purposive sampling, three respondents were selected in this research case in which the researchers verified that the participants were the most appropriate interviewees due to their expertise and their experience in this setting (Yin, 2014). The interview sessions were conducted with three respondents from different faculties, which were composed of the following: two senior lecturers and one head of department cum senior lecturer.

Data Collection and Data Analysis

In this case, interviews were considered as the main source of data. Each interview took around 15-20 minutes since the researchers prepared questions that were open-ended and semi-structured to focus on the key aspects of LA while probing into management perspectives when needed. As suggested by Creswell (2012) in designing semi-structured interviews, the questions were designed based on the research objectives (i.e. areas of interest relating to LA, issues, and challenges, as well as strategic direction); hence, the duration of the interviews depended on the extent all the prepared and probing questions were answered. In this given context, the final number of interviewees was determined via the process of data saturation, which was achieved through the richness, depth, and complexity of data from the three interviewees (Braun & Clark, 2019) which generally revolve around LA perspectives, management challenges, and initiatives in creating values of LA on students' learning.

Thematic analysis was adopted to identify patterns and themes within the data (Braun & Clarke, 2006). According to Neuendorf (2002), operationalization measures and validity of unit of data collection should be emphasized. An "apriori" coding scheme integrating all procedures was formed, and both face validity and content validity were evaluated so as to ensure that the researchers reached an agreement on the coding of the variables. To ensure credibility, feedback was collected continuously throughout the process of transcribing, reading and re-reading, analyzing, and interpreting of data. The codes, which were mostly used, were identified to represent an aspect of the most important areas of this research. However, the researchers adopted a disciplined subjectivity approach (McMillan & Schumacher, 1997) by self-monitoring rigorously, continuously practicing self-inquisitiveness, and reassessing all stages of the research procedures and processes. In the process of maintaining trustworthiness, audio files were kept for transcription, which was coded using an independent coding list based on the key concepts of this study as identified in the literature review.

FINDINGS

The results from the interviews rendered issues and challenges, as well as suggested plans and ideas for the institution, in terms of Learning Analytics (LA) in the context of higher education. Three overarching themes have emerged: future trends and benefits; people, culture, infrastructural support and data management; and strategic direction. Although the main issues according to the three respondents were identical, some differences in perspectives were identified based on different segments between the management and instructors when the in-depth queries were run through.

Future Trends and Benefits

All three respondents were generally well aware of LA being an important tool for real time learning or feedback system for the benefit of both management and students, especially in student learning outcomes on an interactive platform. For example, one respondent indicated:

"*LA is to improve student learning process and to achieve learning outcome, real time right intervention is required.*" (L7-8, G1)

Similarly, another respondent also stated,

"*LA is one of the latest tools, which added value to the management with tangible benefits.*" (L75-76, V1)

From the management's perspective, a respondent explained:

"In the interest of the management, LA is used to promote the institution as an interesting learning place, to provide efficient and personalized learning process for the faculties, and to compare and provide feedback on improving learning experience for students." (L109-111, L4)

He added:

"E-learning platform is the current direction. To progress, the contents in learning will have to be upgraded to be more interactive and efficient." (L115-116, L4)

In addition, he further indicated:

"With 5G technology, online learning can be more fun and meaningful. Hence, upgrading the hardware and network connection is the priority, and we need to have the experts to create the interesting online contents is equally important." (L119-121, L4)

"Technology can simplify learning and yet it does not compromise the learning quality. It can be interactive with intelligent online activities to enhance the learners' understanding on knowledge." (L128-129, L4)

Moreover, the above was also supported by other respondents. For instance, a respondent explained:

> *"LA is the future, higher education ought to look at this, it is the trend, benefits not only to the student also to higher education institution (HEIs) as they will be able to increase teaching effectiveness, having data to proof that one is effective, also a tool to publish quality and achievement of the HEIs."* (L15-17, G1).

In summary, the respondents are currently well aware of LA being an important tool for real time learning and feedback system for the benefit of both management and students especially in gauging student learning outcomes on an interactive platform. LA is the future trend in higher education for effective teaching and learning towards achieving quality monitoring using international standards as benchmark.

People, Culture, Infrastructural Support, and Data Management

The respondents have expressed their clear understanding that the implementation exercise employs a top-down management approach. The right intervention with support from people, infrastructural, financial, and data management are important determinants for success. For instance, a respondent indicated:

> *"There are challenges, like getting people to adopt, infrastructural support in IT, areas of data collection, data processing and data storage, and interpreting the data."* (L21-22, G1)

The same respondent also stated:

> *"Firstly, staff needs to understand what LA is? Then, MIS and third party like vendors have to be introduced, we will not be able to develop our own software, can be very complex, of course if we can do it all the best, we can come out with this project. We should learn from people, policy borrowing."* (L28-30, G1)

On the same note, another respondent shared similar views that "*support from vendors will be useful.*" (L88, V3)

Issues of cultural change, people willingness to change, different mindset to technology and change, limited capacity in terms of relevant knowledge, lack of teamwork in execution, limited infrastructure support were the main issues mentioned. A respondent reported:

> *"Currently it is top down, by the VC and a team, who came out with a logical framework, sensible, and the only thing now is making sure it will be executed. It requires people, increment of money, need for cultural change, and to change people's mindset."* (L24-26, G1)

He also added:

> "*From my observation, 80% of staff is not from the IT background, not sure if tech savvy enough to adopt this, the knowledge and digital lifestyle. I don't see there is a team, so it's not going to be easy.*" (L32-33, 37, G1)

Similarly, another respondent also shared the same views:

> "*Cannot be as fast as possible, take some time. Problems 30% not willing to change, doubtful, in comfort zones. Willingness to adopt, not open sources, need a lot of money. To work with vendors, trials. Data management is broad, simply using tools, data driven, LA involves data mining, and change bring more benefits.*" (L82-85, V3)

The other respondent shared the same view that *"both the faculty and instructors have to be accountable"* (L131, L4) *and the organization should "provide regular training and attend seminars on the latest best practice of LA in and out of the country."* (L133-134, L4) The same respondent added:

> "*I foresee that it is inevitable to embrace new technology in teaching and learning. Thus, everyone will have no choice but to accept the reality and be prepared to welcome change to replace old mentality. Besides, new technology is not to kill but in fact is fun and human friendly.*" (138-140, L4)

> "*My institution is constantly looking at the need to upgrade the hardware and software to implement the new learning pattern. One good example of the new practice is online attendance and e-learning platform.*" (L147-149, L4)

One respondent also explained her views on creating awareness of LA to staff and showing positive attitude towards the outcome of implementation although time may be a factor:

> "*Constraint on time, we will manage in a long run. People can adapt to changes fast.*" (L91-92, V3)

In summary, right intervention with support of people, infrastructural, financial, data management are important determinants for success. Issues of cultural change, people willingness to change, different mindset to technology and change, limited capacity in terms of relevant knowledge, lack of teamwork in execution, limited infrastructure support were the main problems in LA.

Strategic Directions

Cultivating positive transformational leadership, staff training, research and guidelines, upgrading facilities, and flexible policies and procedures were suggested by the respondents. A respondent indicated:

> "*Transformational leadership is the most important. Leaders who are very positive in this direction, but it has to be rolled down to second level and bottom level, including lecturers, organizational wide transformation.*" (L40-42, G2)

To achieve positive learning outcomes as per the educational learning directive by MQA was recommended, and it should be made mandatory. A respondent explained:

"It is important for us to look at the educational domain which are prescribed by MQA, see how to achieve those learning outcomes through LA, and that should be the main guide. It has to be complimentary to the Government directions, like OBE." (L48-50, G2*)*

Customization of system with support of external parties for optimization of resources were suggested. A respondent commented, "*We need a good system, otherwise it is hard to quantify LA."* (L52, G2)

Instructors were concerned about the customization of the system in a specific faculty where student interest can be used as variables in predictive measures. A respondent reacted:

"*Student interest should be part of variable in predictive model for IT subjects hence customization is really importan*t." (L87-88, V3)

The management has acknowledged the current limitation in support from IT department or management information system playing the maintenance role rather than developmental. This is indicated by a respondent who highlighted:

"*IT department / MIS is currently very small, they are doing maintaining job. Not too many are involved in development of LA."* (L36-37, G1)

Key issues remain at how far top management is willing to invest to embrace technology. Financial constraints have been one of the critical issues in LA. All respondents have the same view on this, especially a respondent who indicated strongly that the "*largest risk is lack of fund to implement new trends."* (L166, L5) It was further elaborated:

"One key issue is how far top management of my institution is willing to invest and promote the new trends of teaching and learning. It is impossible to embrace the new technology in learning and teaching if without the support from support parties in the institution." (L168-170, L5)

In summary, continuous cultivation of positive transformational leadership using top down approach, staff training, research and guidelines, upgrading facilities, and flexible policies and procedures were suggested. Improving students' learning outcomes as per the educational learning domain by MQA was recommended, and it should be made as primary and mandatory guide for future LA initiatives. Customization of systems with the support of external parties for optimization of resources was suggested. Key issues remain at how far top management is willing to invest in this technology since financial issues remain as of the crucial elements in successfully implementing LA.

DISCUSSION

The respondents in this case study duly recognized that LA is an important tool for real time learning or feedback system for the benefit of both the management and students especially in improving students' learning outcome on an interactive platform. Moreover, LA is seen as the future by the respondents from higher education in terms of effective teaching and learning through efficient data analytics management. Relevant studies noted that LA was beneficial towards struggling students through real time formative

feedback between students and instructors (Chinomona, Chinomona, & Moloi, 2013; Dix & Leavesley, 2015). Accurate data management may detect learning persistence and the desirability of learning behavior in terms of emotions, which supports the maximization of cost effectiveness of management of systems. From the management perspective, even though LA can assist to improve students' learning experience in general, the customization of systems with the support of external parties for optimization of resources was briefly suggested.

Moreover, LA will benefit institutions only if it is implemented correctly with the full participation of all required groups. People-related issues like resistance to change, willingness to accept change, adaptability to change impacting future job requirement, additional workload and time management, and instructional and institutional capacity towards transformation success were reviewed and discussed. The findings are coherent with the studies done by Sclater et al. (2016) where the normal trends at organizational level on LA are related to culture, process, and communication. The challenge of whether staff are comfortable and willing to accept changes is due to new job roles or extra responsibilities. In this case, one point mentioned was the need to make the staff understand what LA is and its attributes.

On the other hand, understanding staff's resistance to change was not directly indicated in the findings of this case study since staff members are perceived to be able to adapt to changes fast. In fact, as per studies done by Ployhart and Bliese (2006), adaptability refers to individual ability, not just willingness or motivation to change or fit into a new task (Zhou & Lin, 2016). With respect to organizational support for LA, respondents in this case are concerned about the infrastructural support, which was also indicated by Sclater et al. (2016). Unfortunately, like most other institutions, the infrastructural support for the implementation and adoption of LA is not strong where formalized structure has to be set up; hence, issues such as redundancy, additional workload, and time management can be reduced.

In addition, the limitations of current infrastructural support in terms of institutional and teaching capacity in this case are challenges to be overcome when the upgrading of technological support is critical. Cultivating the institutional capacity of key stakeholders for LA is an obstacle faced by the management (Lonn, McKay, & Teasley, 2017). Incidentally, a high-level implementation of LA indicated by the respondents varies; however, commitment from support members and leadership are significant, especially in terms of execution of the right intervention and support from external vendors with the latest practice for customization to needs of the case of research. Furthermore, one of the most important factors on ethical use of data were not brought up in a thorough manner during the interview session.

In general, the process of interaction was addressed by focusing on a specific context in order to understand the cultural setting of the institution and of the three participants. With reference to Ferguson and Clow (2017), a clear understanding of the ethical use of data should be established consistently. Ethical challenges in data management as noted by Johnson (2017) focused on concerns on privacy, individuality, autonomy, and discrimination on the use of predictive data impacting the design of tools. In fact, Hoel et al. (2017) emphasized that LA opens up a complex landscape of privacy and policy issues that influence the designs of LA systems and practices.

IMPLICATIONS

Obstacles and challenges can be overcome with clear strategic directions, effective communications, effective trainings, and involvement from departments throughout the institution. As technical challenges stem from availability, access, and use of data, the institution may need to deploy proper administration to maintain an efficient LA environment. Similarly, obstacles can be overcome by effective communication, effective training, and full involvement and commitment from the top management. Efficient use of data and LA are critical components of a digital learning strategy to personalize instruction for students in order to improve students' attributes and potential to graduate (OECD, 2017). As such, unprecedented pressure on institutional capacity to deal with LA is placed upon looking at how to improve student learning in line with data science using live data to predict students' success through predicting and monitoring the influence of actions. Further and in-depth analysis might be done to look at how a prototype of LA can be developed in order to compliment the Ministry of Education's aspirations.

CONCLUSION

This case study contributes to the literature on LA and management challenges by providing insights on the beliefs and practices as guidelines in LA implementation at HEIs in Malaysia. From the in-depth analysis, the following insights were reported: future trends and benefits; people, culture, infrastructural support, and data management; and strategic directions. The participants have expressed their views and conceptions of their perspectives on the issues and challenges, and the extent the management can focus on the benefits that LA can offer to sustain LA effectively in the long run in higher education institutions.

Understanding the issues pertaining to the future trends of LA and its benefits could serve as a guideline to LA intervention. As this study was limited to the perspectives of the interviewees, issues and challenges in organizational and technical perspectives are to be considered while further in-depth analysis might be done to look at how a prototype of LA can be used in other settings. In addition, a generalizable study with a larger sample size and broader geographical scope can be done to examine the nature and effects of implementation of LA in HEIs. Throughout the conversations with the respondents, the findings showed a strategic solution in creating values in LA from an institutional perspective. The insights from the higher education institution can be summarized in the form of a diagram to show a hybridization process.

The triangular framework depicted in Figure 4 highlights the significance of trends and benefits; people, culture, infrastructural support, and data management; and strategic directions in the development and implementation of LA programs. Thus, all three focal entities should embrace LA's values, which have to be embedded in future aspirations related to sustainability.
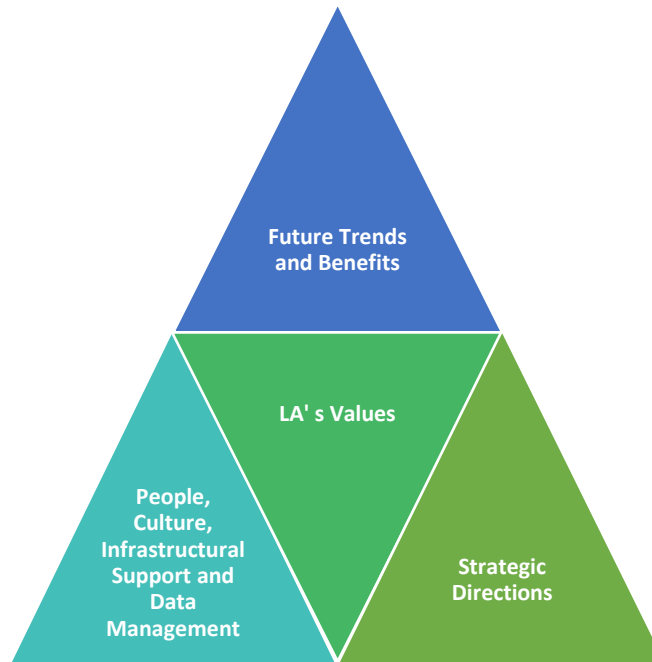
Figure 4. Strategic Solution for Management

Although the applications of LA are still at the stage of infancy in Malaysia, its presence is being felt and it should not be ignored. Although key issues remain at how far top management is willing to invest in technology and financial issues pose to be one of the most important considerations, this research hopes that the proposed hybridization can be used to pave the way for successful LA initiatives in the future.

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