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Factors that Affect Efficiency in the Utilisation of Performance Management Data Sets at Tshwane University of Technology

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Abstract
The research explores the conflicts in the management information systems within the South African Higher Education Institutions (HEIs). Research done on the quality of data that has been assessed and evaluated is still very limited and scanty. This study aims to fill the gap by conducting an empirical study on the performance management data with a geographical demarcation by selecting a specific university of technology- Tshwane University of Technology (TUT). An explanatory design was used to determine why there are so many data errors to discover and suggest solutions to the problem. The units of analysis are individuals. The reasons why individuals make mistakes and why from the on-set data is not captured accurately. This is a cross-sectional study and data was collected from respondents over a period between two and seven months. Questionnaires were distributed over a period of seven months and interviews were conducted over a period of two months. The primary causes for inaccurate data are identified as data managers are not sufficiently trained; and staff members are not always aware of where he or she fits into the organization. Data capturers are not adequately trained to prevent data errors and a lack of communication also contribute to data errors. Research confirms that user resistance can cause the implementation of a new MIS system to fail. There is still a gap in understanding how users evaluate changes related to a new information system. It is further confirmed that there exists a relevance between colleques opinions, self-efficacy for change and user resistance (Kim & Kankanhalli, 2009). The following training modules are suggested to be included in the training programme: the importance of data accuracy and consequences of data errors; basic management skills, the value chain of the university as well as targeted training to address specific ITS data errors.

Keywords: HEIs, MIS, data management, data quality, productivity, performances

1. Introduction

South African HEIs are required by law to submit detailed reports with information about students, employees, and academic performance in standardised forms. For HEIs to perform adequately in this regard, it needs to ensure the ability to capture, store, process, and analyse valuable information and data on all categories of academic activities efficiently. This study intends to assess the quality of data and data management within HEIs. Within the South African higher education context, the Higher Education Act (2017) requires all HEIs to submit reports to the Department of Higher Educating and Training (DHET). However, over the last ten years, HEIs have battled with submitting accurate and timely reports. Furthermore, the consequences of such delays have been severe penalties imposed by DHET. Against this background, this study attempted to study factors that affect efficiency in the Management Information System (MIS) of an HEI. A review of internal reports from HEIs shows that data sets belonging to the HEIs are generally reliable and accurate. However, the management of such data sets could be enhanced by following local and international best practices on the management of large institutional data sets. Renger (2015) has proposed various practical methods of enhancing overall efficiency in the capturing, storage, and analyses of large institutional data sets that are used for planning and decision-making globally.

Renger (2015) has pointed out that MIS systems should be constantly upgraded and improved by using innovative and modern methods of ensuring data quality and efficiency. The author has highlighted key indicators of satisfactory performance in this regard. These indicators are consistent with guidelines provided to institutions of higher education by the DHET. The purpose of this study was to explore the relevance, veracity, and potential benefits of the guidelines proposed by Renger (2015) for enhancing overall efficiency in the utilisation of data sets that are stored in the MIS system of an HEI. The planned study had the potential for improving data quality and efficiency. It also has the potential for highlighting areas that require training and the improvement of technical and managerial skills. Data sets belonging to institutes of higher learning should be monitored and evaluated as a means of ensuring data quality, integrity, and efficiency on a sustainable basis (Talmon, Mallat, Zaveri & Coifman, 2015). This paper discusses the research objectives, the literature review, and the method adopted for the study. The findings and their discussion present the research question, followed by a conclusion.

2. Research Objectives

The two main problems to be resolved are lack of accuracy in data sets and lack of efficiency in information management. Solutions for improved data management should be developed. Higher Education institutions are forced to use business improvement methodologies and quality models to survive in the ever-growing global market. To assess and evaluate the overall degree of accuracy of data captured and submitted by an HEI to the DHET; To identify possible causes for inaccurate data; To assess the possible impact of inaccurate data on institutional planning, and to determine if data owners adhere to training needs.

3. Literature Review

HEI data reports were used for this study because HEI data reports can be measured for accuracy and the measurements are reliable. There is also evidence that HEI data sets are not always correct and need corrections. The actual HEI data sets or data reports were not used but the perception and knowledge of staff involved in data at the HEI were tested and within the results together with current literature recommendations were made for improved data sets. All efforts need to be made by HEIs to ensure that the data sets and data reports HEIs submit to DHET is correct. The data sets and data reports also undergo a thorough audit process by independent auditors before submission to DHET. During the process it is found that HEIs become hasten and often spend hours to correct data errors before the data sets and data reports are ready for submission to DHET as confirmed by (Steyn, 2014).

The South African Higher Education Act (1997) requires all HEIs to submit reports to DHET. HEIs report data on its students, staff, space, and finances. Student data consist of student and qualification information such as biographical information of students and qualifications presented by the HEIs. Data under staff will consist of all the information of the staff corpse and detail of lecturing and support staff. Space data cover the space HEIs use such as accommodation for students, lecturing halls, and other venues. DHET can determine how much space per student is used. Data on finance will include all aspects of finance of the HEI, including students, staff, and the financial state of the HEI.

Annual data submissions of HEIs are used by DHET for monitoring the performance of the public higher education system, planning its future development, and distributing state funds to institutions. The Department undertakes regular checks on the reliability of the university data submissions. DHET is particularly strict on data required for monitoring and planning and relies heavily on the independent auditors for data reliability and reasonableness for subsidy. Directives supplied by DHET for guidance on data collection and data reporting assist the Council of each HEI to ensure that institutional data required for the allocation of state subsidies are realistic and correct. Furthermore, the Auditor General use the HEIs audit reports during their audit on enrolment and graduate numbers as impact indicators in the Department's Annual Performance Plan.

Bussin (2013) confirms that HE is a complex business and governing bodies should manage their universities today into the feature by keeping pace with the necessary changes in governance, performance, and management practice. Cichocki and Irwin (2014) confirm that the speed at which organizations change will increase. This is not a pleasant process due to change and the already difficult existence of the leader and manager. Organizations need to separate the critical from the irrelevant and quickly. A clear vision of the future and a shared purpose need to be aligned by leaders. She furthermore also reiterate that organizational design matters because it powerfully delivers results.

MIS has become a necessity in any business, small and big. MIS often becomes such a part of the daily business it could be taken for granted. Some of the major reasons why firms are using MIS systems are business growth, serving their existing client base and adding new customers which then promote economic stability, increasing performances and managerial purposes such as critical information for planning and directing the business (Behl & Singh, 2014:26) According to Hillar (2014) "It is expected that investment into information and communications technology (ICT) in organisations can increase efficiency and productivity. The challenge is that there is a myriad of obstacles that affect ICT adoption in institutions. It is concluded that knowing the extent to which these barriers affect individuals and institutions may help in deciding how to tackle them." Investing in MIS and New Management Tools does not guarantee improved business results as proven in the literature by Pérez-Méndez & Machado-Cabezas (2015). An MIS system can be downgraded if fed with low-quality information, undermining the understanding of situations and as a result, the decision-making process (Souza, Botega, Segundo & Berti, 2015).

HEI's are obliged under the governance of the King IV Report. It is not new for HEI's to implement the key principles of good governance, as set out in King IV. It is imperative that the structures of governance and management of HEI's account to both internal and external stakeholders in a consistent and prescribed manner due to their statutory autonomy. In the Regulations for Annual Reporting by Public Higher Educations Institutions (2007), the reporting structure is clearly outlined. IT became so important in the King IV report, that it is expected from HEI's to make IT an integral part of HEI's. It is expected that members of the Council should assume responsibility for IT governance. IT is not only important for the daily business of an organisation but is also a strategic asset to an organisation.

IT governance is senior management's capability to direct, measure, and evaluate the use of an enterprise's IT resources in support of the achievement of the organisation's strategic objectives. This can be achieved if people, process, and technology provide the management system together. Firstly, people are used to achieving predefined objectives. This will develop in processes, which entail fewer people dependency. Later it will develop into IT processes to deliver the services that reinforce the business operations.

Managers indirectly affect the development of business intelligence capability through multiple pathways. They need to encourage user participation and fact-based decision-making values when promoting the progress of business intelligence in organizations (Kulkarni, Fobles-Flores & Popovic, 2017). It is the responsibility of computing professionals to ensure that the negative consequences of information and communication technologies (ICT) are minimized, according to the ACM code of Ethics. With careful sociotechnical analysis in the promotion of system building, negative consequences can often be foreseen. Anticipatory technology ethics, technology road mapping, morphological analysis, and control structure analysis are some of the techniques that can be customized and integrated to be used in education to assist in eliminating negative consequences (Markus & Mentzer, 2014).

Information technology systems is moving to a more persuasive mode and use persuasion, which is a form of social influence and is part of contemporary life, to create user-friendly messages in information systems. Although it is sometimes marked as negative there is a growing interest from research in designing and developing intelligent systems that use persuasive technologies for promoting behaviour change in several domains (De Carolis & Mazzotta, 2017).

The international standard of data quality (ISO / IEC 25024: 2015) defines 15 metric items to measure data quality namely: accuracy, comprehensiveness, consistency, credibility, correctness, availability, compliance, confidentiality, cost-effectiveness, precision, traceability, understandability, availability, movability, and recoverability. The model was adjusted with seven characteristics from 15 characteristics namely: Accuracy, Completeness, Consistency, Confidentially, traceability, Understandability, and Recoverability (Liu, Chen & Cai, 2018).

"Data governance is the practice of putting standards, processes, and controls around enterprise data to ensure availability, usability, integrity, and security of the data employed in an enterprise. Organizations use a variety of solutions including data quality and master data management to ensure the integrity of non-transactional data." Very little attention has been given to the integrity of non-transactional data, data in rest, despite the crucial of the non-transactional data. There is currently an urgency in finding a solution to ensure governance of transactional data due to recent changes in the business and technology environments and increasing compliance requirements. Information analysis, exception management, and continuous monitoring abilities are critical components of a sustainable data quality management program (Dutta, 2015).
Kroll (2018) suggests that the hallmarks of responsible data governance are becoming legal requirements and therefore public as well as private organizations must consider how they will field accountable data governance regimes in the coming years. A detailed list of actions which can be taken is discussed, from security and privacy, write and publish data-focused social impact statements, auditing of correctness, challenging of assumptions and examine successes, errors, and feedback loops as well. In this paper, the establishment and empower of a review board.

Although the study done by Shim and Park (2019) is inconclusive due to the limitations of the study, it is confirmed that government employees have different motivators than employees in the private sector. Government employees are positively influenced by servant leadership which is described as leaders who put followers 'growth and well-being before their self-interest. Servant leaders are characterized by authenticity, altruism, empathy, a sense of community, and empowerment. As a result, voluntary engagement at work is maximised because employees' needs are satisfied which results in maximising organisational effectiveness.

Bao, Lu, and Zhu (2015) confirm a high-performance HRM system has a significant positive impact on innovation; innovation has a significant positive impact on firm performance, thus, a high-performance HRM system provides a significant positive impact on firm performance. Employee development, profit sharing and performance evaluation as three kinds of practices for firm performance is not significant. More comprehensive training can promote the comprehensive development of the staff, and further improve firm performance; encouraging employees to participate in the management of the business and expressing their views can improve their organizational loyalty, thus improving firm performance.

Robbins and Judge (2017) focus on a limited number of attributes that can contribute to an employee's positive or negative evaluation held by employees. Job satisfaction, job involvement, and psychological empowerment go hand in hand with each other. An employee with organizational commitment identifies with a particular organization and the goals of that organization. Such an employee wishes to remain with the organization. Employees perceived organizational support is important and is the degree to which employees believe the organization values their contributions and cares about their wellbeing. Employee engagement refers to an individual's involvement, satisfaction, and enthusiasm for the work he or she does.

Effective teams have confidence in themselves and their team members. Effective teams also have shared knowledge of individual capabilities, which can strengthen the link between team members. This can have the result of team members to solicit informed decisions from their teammates. Management can assist to build team confidence by providing training to improve members' technical and interpersonal skills as well as helping teams to achieve small successes (Robbins *et al.*, 2017).

Tudor (2016) states that "In every field of activity, including the education, the competence/ skill represents the foundation to ensure the process performance and efficiency, enabling the transition from knowing and know-how to do towards know how to be and become. So, the competence can be understood as a synthetic, specific, and integrative combination of capabilities, knowledge, skills, and attitudes." This is also applicable to the workplace and is confirmed by Rusaw and Fisher (2017) "Professional development plays a considerably important part of employees' skills acquisition and applications for job performance, growth in career competencies and responsibilities, and contributions to organizational health and mission achievement". A balance between formation and workability influences performance. Errors can be reduced if managers establish a mechanism that provides an intermediate level of structure through standardization and balances it with flexibility acquired by granting employees a high level of discretions. To be able to implement it successfully managers should involve employees because employees perceive structures as standardizations flexibility and choice as the extent to which they adhere to standardization and the degree of discretions they have. For optimal success, standardization would be set at an intermediate level (Nissinboim & Naveh, 2018).

Managers often derive from staff members who excel in their technical field and have excellent knowledge and skills in their field of expertise. These new managers often lack knowledge of management. To be an efficient manager you also need complex knowledge and skills such as planning, organizing, coordinating, and decision-making skills. These management skills are needed to manage people and resources to achieve organizational goals (Gobind, Havenga, Kleynhans, Markham & Van Aswegen, 2016).

4. Research Methodology

Target Population

The Tshwane University of Technology uses the ITS (Integrated Tertiary Software) system for the processing of data records. This study investigated data accuracy, which applies to ITS data. Only TUT staff members who are ITS users were targeted for the study. For this study, a purposive sample was used. Twelve staff members who are super users were interviewed. The study also aimed to collect one hundred questionnaires but was unable to reach this number after numerous email requests for voluntary participation. Only sixty-six participants participated in the study. All questionnaires were completed through SurveyMonkey and could be used in the study without any spoiled questionnaires.

Babbie (2014) describes purposive sampling as a sample of respondents based on knowledge, elements, and the purpose of the sample. To use the widest selection of samples the study findings would not be useful.

5. Design

This study used applied research techniques and a combination of qualitative and quantitative methods of data collection and analysis. As part of the quantitative aspect of the study, data was collected from all eligible respondents in TUT by using a structured questionnaire of study. As part of the quantitative aspect of the study, data were collected from respondents by using individual in-depth interviews.

Applied research is described by Trainor and Graue (2013) as research done in co-operation with the community or constituency concerned. This will give the community or constituency concerned the opportunity to benefit from the research. Therefore, this research was done in conjunction with an HEI.

This study follows an explanatory design. According to Babbie (2014), a general-purpose of social science research is to explain things. This study aims to determine why there are so many data errors and then suggest solutions to the problem. The units of analysis are individuals. The reasons why individuals make mistakes and do not capture data from correct from the on-set. Data is collected from respondents over a period between two and seven months therefore this is a cross-sectional study. Questionnaires were distributed over seven months and interviews were conducted over two months. A cross-sectional study is described by Babbie (2014) as a study based on observation over a single point in time.

Instrument Design
The instruments used in this study were interviews and questionnaires. The interviewer received clear instructions from the researcher. Interviews were answered over two months. Questionnaires were sent by email to participants and answered by the participants on a link which led them to a web page where they could answer the questionnaires anonymously. Questioners were answered over seven months. The validity of the interview and questionnaire was confirmed by pre-testing.

Data Collection
The study used a combination of qualitative and quantitative methods of data collection and analysis. The design of the study was non-experimental, descriptive, and cross-sectional. As part of the quantitative aspect of the study, data was collected from all eligible employees of TUT who work on data capturing and processing within TUT. Data was collected using a self-completion questionnaire with open-ended questions. SurveyMonkey was used for administering questionnaires. SurveyMonkey is suitable for ensuring the anonymity of respondents. According to Levy and Lemeshow (2013:24), this procedure is referred to as a census (a complete enumeration of all eligible respondents). The researcher had enough resources for collecting data from each one of her eligible respondents. As such, the calculation of sample sizes was not necessary.

As part of the qualitative aspect of the study, data was collected from a purposive sample of 12 employees of TUT who work on data sets belonging to TUT students. Face-to-face individual interviews were conducted with 12 TUT employees. Employees from the different ITS subsystems at TUT (Student Administration, Finance, Space, Human Resources, and Employees of TUT liaising with DHET) were interviewed. The 12 respondents were selected based on purposive sampling.

Data Analysis
The study used a combination of quantitative and qualitative methods of data collection and analysis. Frequency tables, two-by-two crosstab analyses, and categorical data analysis (Hair, Black, Babin & Anderson, 2010) were used for performing quantitative data analyses. In addition to this, coding, tallying, thematic analysis, and triangulation were used to perform qualitative data analysis.

6. Results and Discussion
The first objective of the study was to test the overall degree of accuracy of data captured and submitted by an HEI to the DHET. The outcome of the data from questionnaires and interviews by staff members confirmed that incomplete as well as incorrect data errors are found when working with student records. Results from interviews with data managers it was confirmed that staff members feel there is a need to improve the accuracy of data. This question was also confirmed by the directives from DHET which was circulated during 2018 (DHET:2018). "During the DHET verification process of the final 2015 audited data submissions, it was found that the signed off audit tables as listed in Annexure B did not always reflect what was submitted in the database. This resulted in data having to be resubmitted to DHET or

having to be re-audited" It was furthermore confirmed through the literature study (Dutta, 2015) that it is not unusual that little attention was given to data integrity by organizations. The importance and importance of finding solutions to ensure governance of data has increased several folds only recently due to transformation in the business and technology environment and growing compliance requirements.

The second objective of the study explored the possible causes of inaccurate data. Laudon and Laudon (2015) suggest that there are only three principal sources of poor system performance, which are, software bugs and errors, hardware and facility failures caused by natural or other causes, and, poor input data quality. For the purpose of this study, the system performance was not investigated because it is an institutional decision whether the system will be investigated or not. However, an investigation into the HEI system can also be indicated for future research possibilities. Hardware and facility failures caused by natural or other causes were not mentioned by any respondent during the interviews and one can accept that it does not influence data accuracy. The third factor, poor input data quality, is confirmed as the major factor and was investigated during this study.

According to the literature the following points can be highlighted. Managers often derive from staff members who excel in their technical field and have excellent knowledge and skills in their field of expertise. These new managers often lack knowledge of management. To be an efficient manager you also need complex knowledge and skills such as planning, organizing, coordinating, and decision-making skills (Gobind et al., 2016). There is a possibility that data managers do not have all the skills needed to be effective in data management. This is confirmed by data from the questionnaires for the study Staff members do not always react timeously to correct data errors and often do not adhere to processes and procedures. There is no consistency in the process of correcting data errors. Data managers need to find an applicable method to coerce staff members to adhere to processes and procedures. The gap in knowledge and skills can be overcome by personnel training and development.

Unless a company has a specific commitment to a culture of collaboration, the focus will often only be put on achieving their internal goals and do not concern themselves with the promotion of interaction and integration between areas. The role played by individuals and their integration within the organisation are critical if the complexity of relationships in a supply chain is taken into consideration. Improved business outcomes, as well as improved customer satisfaction, can be ensured if the integration of the supply chain is promoted if HR practices facilitate the involvement of the members of the supply chain (Castán-Farrero, Gómez-Cedeño & Guitart-Tarrés, 2015).

Questionnaires of the study confirm that there are staff members who do not correct errors themselves but someone else corrects the errors on their behalf. This can have an effect of not understanding the impact errors have on other departments. Kriek (2019) confirms the importance that staff members in an organization know where they fit into the value chain of their organization. This could be helpful for the contexts in which they operate. By showing the staff members where they fit into the value chain can be used as a tool to evaluate the business model and may open new fresh perspectives of what the team does. Communication is indicated as one of the biggest factors influencing data errors. According to data from interviews with respondents indicated during the interviews they feel that staff members are equipped to capture accurate data because data capturers receive enough training and training manuals. On the contrary, according to data from the questionnaires data capturers feel that if training needs have adhered to data errors can be eliminated because they will understand the system.

Robbins et al. (2017) state that good communication makes a business successful. Communication must include the transfer and the ability to understand the meaning. Communication acts to direct member behavior, create feedback by defining what and how good an employee must do a task, and provided emotional sharing. Communication also serves to exchange communication to facilitate decision making. The third objective of this study was to evaluate the possible effect of inaccurate data on institutional planning.

According to the current literature discussed it is confirmed by various sources such as Bussin (2013), Cichocki et al. (2014), and Millot (2014) that quality at universities needs to be of a high standard. Quality at universities includes the quality of data. All efforts need to be made by HEIs to ensure that the data sets and data reports of HEIs submit to DHET are correct. Annual data submissions of HEIs are used by DHET for monitoring the performance of the public higher education system, planning its future development, and distributing state funds to institutions.

During the March 2018 circular from DHET, all HEIs were warned that "If the verification process suggests that a university's data submissions are incorrect, then the university will be required to correct errors and resubmit the amended database with a new audit certificate. Where necessary, the university may be required to amend the historical databases for the past 3 years. If this is deemed necessary, the university's block grants or earmarked funds for specific years will be re-calculated for the past 3 years according to Section 11 (d) of the Prescription Act, No 68 of 1969, and any over-payments for these 3 years will be deducted from budgets before new funds are paid to the university. The Department will also, when necessary, make adjustments to university's funding data if the report submitted by its external auditors indicates that a university has not complied with the Department's policies/HEMIS directives, or if analyses undertaken by the Department indicate that a university's data submissions for block and earmarked funds are flawed."

DHET reiterated that both block grant calculations and progress reports of earmarked funds depend heavily on reliable HEMIS data submitted annually by universities to the Department. The Department will continue to monitor the reliability of the data in the HEMIS submissions (DHET 2013).

Souza *et al.* (2015) state that an MIS system can be degraded if fed with low-quality information, undermining the understanding of situations and as a result the decision-making process. Shaheen, Manezhi, Thomas, and Alkelya (2019) reiterates that inaccurate data in a dataset can lead to ambiguous results. The questionnaires answered by staff members confirmed that fifty percent of respondents have a negative experience with incorrect or incomplete data and it is a constant frustration and impacts their work negatively. During the interviews, all respondents confirmed that data corrections as a negative impact on their departments. It is time-consuming and unnecessary extra working hours.The fourth objective of this study was to determine whether data owners adhere to training needs.

Lack of enough or appropriate training is one of the biggest reasons for data errors. Gobind et al. (2016) confirm that there exists a relationship between training and firm performance. The mode of training is not as important as the appropriate type of training for a different group. Also important is to understand that training is not limited to workers only but should also include middle and top management.

It has been confirmed from the outcome of questionnaires that staff members feel that data quality can improve if training needs are adhered to because they will understand the system. Comparisons were made between actual training received and training preference. The outcome confirmed that staff members do not always receive the appropriate type of training. There is also a difference in opinion where fifty-seven percent of staff members indicated they received thorough training but forty-two percent of staff members feel they did not receive thorough training. Sixty-three percent of staff members did not receive any refresher training. It is also confirmed that data managers also need specific training in the field of management skills and, communication skills.

7. Limitations

This research has the following limitations:

Responses from questionnaires

Although the aim was to collect 100 responses for the questionnaires, only 66 responses could be collected. However, all the responses could be used, as they were all complete.

Responses from interviews

Unfortunately, the limited staff members responsible for managing data resulted in only twelve staff members interviewed. If more interviews were sought it would include staff members not primarily responsible for the management of data.

Student system

The majority of responses came from staff members who used the Student system on ITS, with only four responses from the Finance system. It would have been an improvement if more staff members from other subsystems such as Space and HR also participated. However, during the discussion with HRT, it was confirmed that the problems with data management were experienced at all four subsystems. The training program will therefore include all TUT staff members and will not be limited to staff members from the Student system and Finance system.

To strengthen the study more focus could be placed on observation during work procedures and interaction between supervisors and co-workers and less focus on questionnaires. The questionnaires should be supportive of the study. A Linker's scale could replace the current method for questionnaires.

8. Conclusion

It can be concluded that it is confirmed that there are data errors found and data accuracy need to improve. Data errors are caused by data managers who are not sufficiently trained, staff members are not always aware of where he or she fits into the organization. Data capturers are not adequately trained to prevent data errors and a lack of communication also contributes to data errors. It can be concluded that inaccurate data has major negative effects, especially for the HEI sector in South Africa and data owners do not adhere to training needs.

9. Recommendations

In an attempt to answer the burning issues which were the lack of accuracy in data sets and lack of efficiency in information management. Lack of accuracy in data sets increases the financial burden on TUT and discourages employees.

Current literature suggests that Shaheen et al. (2019) aimed to improve data quality. Inaccurate data in a dataset during research questions of clinical research studies can lead to ambiguous results. Removal of errors can result in increased cost. The aim was to improve data quality by enhancing conformance and minimizing data errors. They recommended implementing training programs and compliance with data management best practices successfully. Dai, Dietvorst, Tuckfield, Milkman and Schweitzer (2014) revealed that previous work identified high-performance expectation as an asset that can also be a liability when it comes to persistence. If external pressure and expectations are too high it can lead to an experience by the performer experiencing embarrassment, thus resulting in lower performance. Management should instead of striving for best practice, pay more attention to good personnel management. When employees talk they refer to the motivational effects of managerial relationships and the long-term commitment effects of friendships at work. Management will be able to achieve higher performance through the correct communication (Pass, 2018).

It is recommended that an appropriate training program is developed for TUT to address the factors which influence data quality. It is important to include all staff members who are involved or are in contact with the ITS system or any form of data management. Staff members of all modes of employment need to be included in the training, permanent and temporary staff members. If staff members feel they are already sufficiently trained they still need to undergo the training program. To ensure adequate training is presented, all staff members will attend the same training. This will ensure that no staff member is omitted because all data managers are not necessarily supervisors but have the responsibility of data management. As a researcher, I contacted staff at TUT's Department of Human Resources and Transformation (HRT) to confirm the viability of such a training program. After the discussion, they agreed on the development and implementation of a training program in collaboration with the Department of Quality Promotions. The implementation of the training program will be included in the 2020 staff development program.

The following training modules are suggested to be included in the training programme:

- Overview and the purpose of the training, which includes the importance of data accuracy and consequences of data errors;
- Basic management skills to assist supervisors and data managers to be able to support staff members reporting to them;
- The value chain of the university and how different departments influence each other; Communication skills;
- Open discussions to enable staff members to address specific challenges; Follow-up training for the ITS system;
- Targeted training to address specific ITS data errors.

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