AOSIS

Exploring barriers to innovation in higher education: An empirical investigation in Zimbabwe

CrossMark

Authors:
Alfred H. Mazorodze[1]
Peter Mkhize[1]

Affiliations:
[1]Department of Information Systems, School of Computing, University of South Africa, Johannesburg, South Africa

Corresponding author:
Alfred Mazorodze, mazorodzeah@yahoo.com

Background: In a competition for scarce resources, higher education institutions in developing countries have lost to other priorities. The article examines specific barriers to innovation in the higher education context. A thorough understanding and removal of these impediments paves a way to innovation in developing countries, specifically Zimbabwe.

Objectives: Firstly, the study sought to evaluate the barriers to innovation in higher education and secondly recommend strategies to improve the innovation capabilities of the institutions.

Method: A survey strategy was adopted to collect data from 240 purposefully selected academics at four state universities in Zimbabwe with a 66.6% response rate.

Results: The results indicate that the lack of funding for research is the biggest barrier to innovation in higher education with a 46% representation. Along the same spectrum, the lack of incentives is also another barrier with an account of 21% of the participants who participated. The organisational structure is also a pertinent barrier with 24% representation. Lastly, the organisational culture accounts 9% of the participants.

Conclusion: Adequate resource allocation and funding is crucial to the success and transformation of the higher education system. Implementing policies that align with the strategic goals of the institutions is imperative to bring about innovation not only in Zimbabwe but also in other developing countries too.

Contribution: Higher education institutions should provide adequate funding for research and reassess their organisational cultures and structures for them to be on the cutting edge.

Keywords: innovation; higher education; organisational structure; organisational culture; resistance to change; communities of practice; knowledge management.

Introduction

Higher Education Institutions (HEIs) are in the business of creating and sharing knowledge. These HEIs are supposed to be innovative and competitive in their respective marketplaces. Obeidat et al. (2017) established that HEIs in developing countries still lack some innovation capabilities in comparison to those in developed countries. According to Lee and Trimi (2018), the most important engine for innovation in HEIs is the knowledge held by the academics. From Lee and Trimi (2018)'s submission, we can infer that academics form an institution's knowledge base. Innovation in higher education is impeded by several barriers (Lee & Trimi 2018; Serdyukov 2017), especially in developing countries. In this 21st century, some of the notable barriers to innovation in HEIs include a lack of funding (Ahmad et al. 2016), a lack of incentives (Stenius et al. 2016), organisational culture (Okeke 2015), organisational structure (Gaspary, Wenger & Moura 2020), resistance to change (Beitler 2013) and the rigid organisational policies (Swanger 2016). Only specific barriers that block innovation in HEIs of developing countries are explored in this study. It is important to note here that the barriers to innovation explored in this study are not the be-all and end-all.

Innovation is a novel idea that continuously gains momentum and spreads through an established social network system (Lee & Trimi 2018). In academic institutions, innovation entails different ways of sharing knowledge supported by current technologies to improve the academic services (Susilawati, Khaira & Pratama 2021). The study systematically evaluates the barriers to innovation in HEIs of developing countries, specifically Zimbabwe. An understanding of these barriers to innovation could inform future organisational strategies in higher education. Higher Education Institutions in developing countries have not yet fully adopted knowledge management (KM), an

important organisational process geared towards innovation (Hasanefendic et al. 2017). Previous studies conducted in developed countries over the past decade established that HEIs can only be innovative if they support and promote effective knowledge-sharing (Ramjeawon & Rowley 2017). Moreover, there is a considerable gap in terms of innovation between HEIs in developed countries and those in developing countries such as Zimbabwe where this study took place. Most HEIs in developed countries are almost always ranked better than those in developing countries (Times Higher Education 2022). An innovative HEI has improved ways of teaching, better ways of sharing knowledge and effectively use and integrate technology in the entire teaching and learning processes. This study attempts to answer the following research question:

> 'To what extent does the lack of funding, lack of incentives, organisational culture and organisational structure block innovation in HEIs?'

This investigation was guided by two objectives, designed to:

- Evaluate the barriers to innovation in HEIs of developing countries.
- Recommend the most practical strategies to improve the innovation capabilities of the HEIs.

Innovation in HEIs is often blocked by social, financial and technical factors among others (Hasanefendic et al. 2017). Some of the barriers to innovation identified include the lack of funding (Stenius et al. 2016) and rigid organisational structures (Teixeira 2021). A detailed understanding of the barriers to the much-needed innovation significantly helps HEIs develop innovative strategies and eventually tap the knowledge possessed by knowledgeable academics in HEIs of developing countries.

Literature review

In a competition for scarce resources, HEIs in developing countries have lost to other priorities. Research and journal publications are seminal circuits for knowledge-sharing, which is an important factor for institutional innovation (Zhang, Ning & Barnes 2016). The research processes require adequate funding for them to be successful. In most universities in developing countries such as Zimbabwe, funding for research from international research agencies is quite constrained and limited. Government funding in HEIs come through as grants that are generally used for operational costs (Ahmad et al. 2016). The experience in the higher education sector illustrates that the diversification of funding has become a global trend (Teixeira 2021), and, as a consequence, institutions should justify their activities to improve the institutional effectiveness. It is not an exaggeration that higher education requires adequate financial resources to support programmes and other activities, including teaching, research and acquiring the necessary technology to enable these important functions. Ahmed et al. (2016) posits that HEIs are obliged to follow a recommended set of priorities and activities to maintain and improve the quality of services

they offer. We can therefore infer that, without adequate funding for research, HEIs suffer, as they cannot put the ideas held by academics into practice so that they can have an impact on society.

Incentives drive academics to share both tacit and explicit knowledge in their specific disciplines (Johani & Ramah 2013) and knowledge-sharing surely requires motivation in all HEIs (Stenius et al. 2016). A lack of such motivation therefore impedes all possible innovations, which may occur as a consequence of effective knowledge-sharing. Stenius et al. (2016) further confirm that motivation is important in all knowledge-intensive organisations, especially in HEIs. Thus, the top management of the institutions should provide the necessary incentives specifically for knowledge-sharing among academics in their employ. We can therefore deduce that incentives in HEIs are directed more towards the knowledge-sharing aspect, which is an essential ingredient for institutional innovation.

Organisational culture is characteristic to the personality of organisational members. Therefore, this culture describes the norms that direct the performance of an institution's employees. Wang and Noe (2010) consider organisational culture as an enabler to innovation but to Okeke (2015), organisational culture could be a barrier to innovation. Institutional management should therefore remove the negative impediments to knowledge-sharing. Several scholars (Cheng, Ho & Lau 2016; Wang & Noe 2010) consider the lack of a knowledge-sharing culture as a barrier to innovation. Podrug, Filipovic and Kovac (2017) established that knowledge-sharing is at the core of institutional innovation because knowledge is shared and communicated to the right person at the right time to improve organisational performance. Continuous learning that benefits individuals and the institutions, takes place through knowledge-sharing among academics (Aulawi 2021).

Over the past few decades, organisations had to change the way in which they were structured and managed (Swanger 2016). The organisational theory stresses that organisational structures be designed towards innovation. Traditional organisations may not respond to flexibility and agility in the same ways as HEIs. The organisational structures that promote innovation are those that stimulate knowledge-sharing and problem-solving. Gaspary et al. (2020) highlight that organisations operating in dynamic and fast changing markets need to design structures that foster innovation. Swanger (2016) posits that organisational structures of HEIs may create a resistance to innovation. Knowledge-sharing is likely to take place when employees are in decentralised structures where such institutions can use Communities of Practice (CoP), which are self-organised groups of experts who communicate and collaborate on subjects of mutual interest. Hierarchical organisational structures have complicated chains of command, which slow down effective communication. Jang and Ko (2014) argue that knowledge-sharing could be improved by a less centralised organisational structure.

The less centralised structure recommended here by Jang and Ko (2014) should not be so rigid to block innovation. The HEIs are generally complex organisations and any hierarchical structure generates difficulties collaborating with other teams. We can further reason that hierarchical organisational structures promote isolated and siloed thinking, which curtails innovation.

The HEIs are faced with several factors that incite the need for change (Dee 2016). The change mentioned here requires a strategic response and approach to be implemented. It is important for HEIs to have the relevant skills to adapt and manage both gradual and dynamic change. According to Bhattacharya (2011) resistance to change is a great barrier to institutional innovation. The HEIs are continuously changing the ways in which they integrate and use innovative technologies into their academic operations. Multiple authors (Beitler 2013; Bhattacharya 2011; Hiatt & Creasey 2013) confirm that change is not a problem, but it is the resistance to change that becomes a problem in organisations, specifically HEIs in this case. Change is hard to implement because of a lack of understanding of the dynamics of organisational change (Hiatt & Creasey 2013). In knowledge-intensive organisations, change requires patience and persistence, measured in years not months. Most academic leaders and managers find it difficult to fully motivate and engage their employees in the change management process.

According to Cheng et al. (2016), higher education institutional policies should continuously support and promote innovation. Swanger (2016) advises that effective innovation policies should be embedded into the organisational structures and culture. As a matter of concern, academicians should be allowed to attend conferences for information and knowledge-sharing, which could improve their innovation capabilities. At this juncture, HEIs do not have standard policies that promote institutional innovation (Swanger 2016). Creating policies aligned to institutional innovation enables academics to meet the industrial and societal demands. Moreover, attendance of international conferences allows continuous interaction and professional networking among academics. Removal of the barriers reviewed in this section may significantly contribute to institutional innovation in developing countries. The research methodology adopted in this study is presented next.

Research methodology

In this article, a quantitative approach was adopted because it is objective in evaluating the barriers to innovation in HEIs. Bhattacherjee (2012) recommends quantitative approaches while researching social science in different contexts. The quantitative approach adopted in this study utilised an online survey strategy to collect data from 240 academics at four state universities in Zimbabwe. All participants were involved in teaching, learning and research and interestingly, the response rate was 66.6%. Purposefully selecting participants engaged in teaching and learning processes offered honest responses: a survey strength alluded by Oates,

Griffiths and Mclean (2022). Several propositions were made on each innovation barrier identified in literature and associated with this specific study.

All questions on the online questionnaire were statistically tested for validity and reliability to ensure that sound and replicable results are produced. According to Leedy and Ormrod (2016), validity of a research instrument clearly describes the extent to which it measures what it is intended to measure and to Oates et al. (2022), reliability refers to the consistency of a measure. The reliability is expressed statistically as a reliability coefficient, which is achieved by determining the correlation between specific variables. A Likert scale questionnaire, ranging from strongly agree (5) to strongly disagree (1) was utilised to gather responses from the academics. The reliability tests were performed on each innovation barrier identified in literature guided by Salkind (2015)'s recommendations. Excitingly, all test results were above 0.6 that is statistically acceptable to perform descriptive analysis. The study utilised a spreadsheet package (Microsoft Office Excel 2019) to descriptively analyse the data and report the findings. Descriptive statistics provide a summary of the main characteristics of a dataset (Salkind 2015) and this study utilised descriptive statistics only in the form of tables and graphs. Measures such as mean, median and mode are commonly used to describe the central tendency and the shape of the data. The researcher has only analysed and presented the mean. The choice of this descriptive statistical method was dependent on the specific research question, the type of data collected and the intended research users.

Ethical clearance

The study was conducted with a full reflection of the ethical principles and practices of scientific research. The ethical clearance with reference 2021/CSET/SOC/041 was granted by the University of South Africa (UNISA) with a 5-year validity period, effective 14 September 2021. The process of data gathering commenced after obtaining an ethical clearance from UNISA. The participants had to consent, and they all partook out of their own will. To protect the anonymity of the participants and uphold the ethical principles, the data were analysed collectively using Microsoft Office Excel 2019, a common spreadsheet package in this digital era. Furthermore, the data were analysed collectively using descriptive statistics only as outlined in the methodology section.

Results and discussion

Institutional innovation is often impeded by limited funding (Nowacki & Bachnik 2016), a lack of incentives (Cheng et al. 2016), organisational cultures (Okeke 2015) and organisational structures (Aulawi 2021). According to Aleixo, Azeiterio and Leal (2018), the removal of such barriers may significantly contribute to an institution's innovation capabilities. The sample had 240 participants from four state universities in Zimbabwe. The 5-point Likert scale was utilised to collect responses from 5 (strongly agree) to 1 (strongly disagree).

The responses from those participants who strongly agreed and agreed are combined to show the support for a given proposition and are labelled *positive* in Table 1. Neutral represents participants who were non-aligned or not sure of a specific proposition and these are labelled *neutral* in Table 1. Lastly, *negative* describes those participants who disagreed and strongly disagreed to the different propositions on the institutional barriers to innovation in Zimbabwean HEIs.

The data presented in Table 1 is analysed descriptively using a bar graph. In Figure 1, positive refers to participants who strongly agreed and agreed, respectively, to a given proposition. Neutral represents participants who were non-aligned or indecisive on a specific proposition. Negative describes those participants who disagreed and strongly disagreed to the different propositions. As the study examines the barriers to innovation, the imperative here lies

on the negative responses only. This section therefore analyses the negative responses only.

As one may infer from Figure 1, a combined average of 39.2% of the participants submitted that their institutions lack adequate funding for research. From this finding, we can therefore infer that there is limited funding for research at the HEIs investigated in Zimbabwe. These findings corroborate with Zhang et al. (2016) who also confirm that higher education appropriations have lost research funding to other institution-specific priorities. Adequate resource allocation and funding in higher education stimulates the success and transformation of the whole education system. Thus, HEIs require adequate financial resources to support programmes and other activities, including teaching, research and acquiring the necessary technology to enable these academic functions. We can further infer that, without adequate funding for research, institutions suffer as they cannot put the ideas held by individuals into practice so that they can have an impact on the society. The study therefore recommends the provision of adequate funding especially for research and this will certainly transform institutions, improve education quality and create a competitive advantage.

According to Ramjeawon and Rowley (2017), KM efforts require executive support that could be in the form of incentives for academics at the HEIs. Exactly 17.9% of the participants submitted that the lack of incentives is a great barrier to innovation in higher education. From the submissions and literature, we can therefore underscore that innovation in HEIs require executive support in form of different incentives to motivate the cohort. From the empirical findings, we can deduce that the HEIs investigated do not provide adequate incentives for knowledge-sharing to their academics. A typical solution to overcoming the lack of incentives barrier could be the implementation of incentive systems that drive academics to share tacit knowledge. As education continues to shift towards electronic learning and mobile learning, collaboration will certainly open doors for collaborative creativity. For this creativity to take place, academics should be highly motivated in different ways
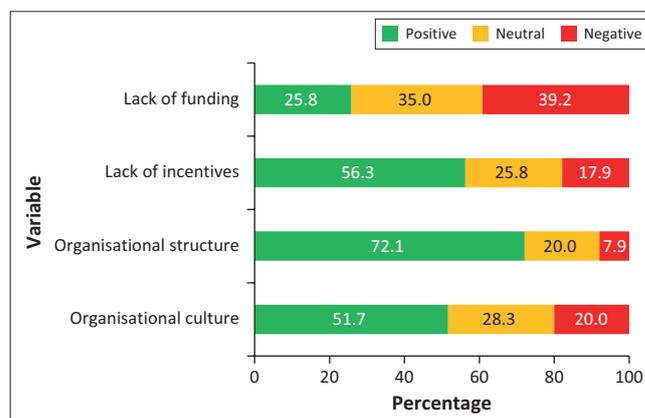
TABLE 1: Barriers to innovation in higher education institutions (*n* = 240).

Institutional barrier	Positive		Neutral	Negative	
	Strongly agree (5)	Agree (4)	Not sure (3)	Disagree (2)	Strongly disagree (1)
Lack of funding					
My institution provides funding for knowledge management workshops	Mean (*x*) = 62 25.8%		Mean (*x*) = 84 35.0%	Mean (*x*) = 94 39.2%	
My institution provides funding for research and innovation					
A lack of incentives					
Knowledge sharing requires management support	Mean (*x*) = 135 56.3%		Mean (*x*) = 62 25.8%	Mean (*x*) = 43 17.9%	
Knowledge-sharing requires motivation					
My institution provides incentives for knowledge-sharing					
Organisational culture					
Universities need to develop a thriving knowledge-sharing culture	Mean (*x*) = 173 72.1%		Mean (*x*) = 48 20.0%	Mean (*x*) = 19 7.9%	
A knowledge-sharing culture consists of collaboration and trust					
An appropriate organisational culture is a key aspect of successful KM implementation					
My department has a knowledge-sharing culture					
Organisational structure					
Knowledge-sharing is easier in a less centralised organisational structure	Mean (*x*) = 124 51.7%		Mean (*x*) = 68 28.3%	Mean (*x*) = 48 20.0%	
Knowledge-sharing is likely to take place in decentralised structures					
A hierarchical organisational structure blocks innovation					

KM, knowledge management.

FIGURE 1: Summary of the barriers to innovation in higher education institutions.

to innovate. Rewards, recognition, promotion and bonuses are some of the incentive systems that could be implemented in developing countries such as Zimbabwe. Becker et al. (2017) maintain that recognition is among the main variables used to determine an institution's innovation capabilities. The executives of the HEIs should therefore provide incentives for knowledge-sharing to all academics. These incentives are directed more towards the knowledge-sharing aspect, which is an essential ingredient for innovation.

Cheng et al. (2016) confirm that knowledge-sharing takes place when people are in decentralised institutions. Figure 1 shows an analysis of the organisational structure as a barrier to innovation in HEIs where 7.9% of the academics confirmed that the organisational structure blocks innovation. Literature (Gaspary et al. 2020) established that if an organisation has a culture of sharing knowledge, the implementation of knowledge-sharing systems becomes easier. Changing the institutional structure may accelerate innovation in all HEIs. Knowledge-sharing, which is an important factor for innovation is likely to take place when people are in decentralised institutions. Thus, for innovation to take place in HEIs, it is imperative to alter and decentralise the organisational structures. A hierarchical organisational structure impedes knowledge-sharing that is important for innovation because it has complex chains of command, which slow down the decision-making processes. The organisational rigidity of the structure can lead to inefficient communication as confirmed by Verhulst and Lambrechts (2015). Flattening organisational structures eliminates organisational layers and academicians can use CoP for knowledge-sharing. Gaspary et al. (2020) further established that a combination of centralised and decentralised structures in the organisation's hierarchy is superb. Flat organisational structures endeavour to tap into academics' creative talents and to solve problems through collaboration.

Okeke (2015) considers organisational culture as a barrier to innovation in HEIs. As shown in Figure 1, exactly 20% of the academics submitted that the organisational culture in place impedes innovation. Empirical evidence from this study confirms that, to some extent, organisational culture is a real barrier to innovation. An innovative institutional culture is inaugurated with accepting that the world has changed and is open for more radical changes in the future. Creating an environment and a capability for innovation giving the academic team the platform to try and fail is a crucial step towards innovation. An institutional culture that supports innovation consists of people in the institution, their leadership style and their shared values. Some factors that are useful for improving institutional innovation in a dynamic institution include the creation of a vision for the future, developing a model for change and eventually rewarding changes. An effective and innovative institutional culture should therefore be committed to innovative knowledge-sharing.
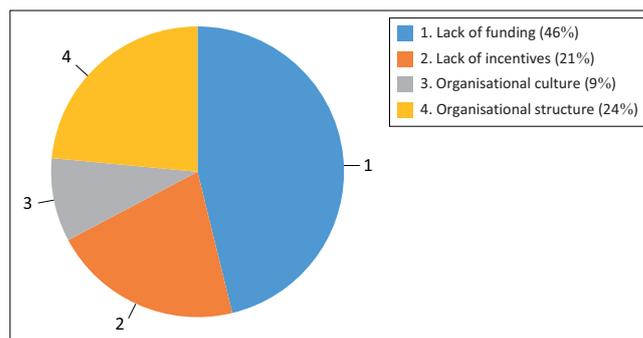

FIGURE 2: Major barriers to innovation in higher education institutions.

The barriers to innovation were further analysed using a pie chart , where only negative responses were examined to understand the extent these barriers block innovation in HEIs (Figure 2).

As one may infer from Figure 2, the lack of funding is the biggest barrier to innovation HEIs, followed by the organisational structure. From the findings, it becomes clear that adequate resource allocation and funding in higher education is important to the success and transformation of the higher education system. In knowledge-intensive organisations such as HEIs, incentives boost employee performance (Hasanefendic et al. 2017). Thus, the lack of such incentives impedes innovation in HEIs as shown in Figure 2. The organisational culture and organisational structure are also pertinent barriers to innovation. As can be seen from Figure 2, organisational structure has a 24% representation while the organisational culture has a 9% representation. The HEIs should therefore reconsider their organisational cultures and structures for them to be on the leading edge. Removal of the organisational barriers explored in this study pave a way for continuous innovation of the HEIs in Zimbabwe and other developing countries.

Conclusion and recommendations

The study confirmed that there are multiple factors that block innovation in HEIs. Above all, the lack of funding remains the biggest impediment to innovation in the higher education context. It was also established that the lack of incentives, the institutional culture and the institutional structure significantly block innovation. These barriers could be overcome by developing and implementing practical policies that align with the strategic goals of the specific institutions. These policies should support innovation to improve the quality and relevance of higher education. Effective policies should therefore be embedded into the institutional structures and cultures. The study recommends that academics be allowed to attend conferences for knowledge-sharing, which could expand their innovation capabilities. The executive management should further support and fund such activities. Moreover, the study recommends the development of policies that align organisational structures and organisational cultures

with the institution's mission statement of promoting effective knowledge-sharing, collaboration and innovation. On top of sufficient funding, the study recommends that HEIs nurture an institutional culture that enhances creativity and should have standard policies that promote innovation. Besides, it is imperative to alter and decentralise the organisational structures. In conclusion, the study recommends the provision of adequate funding especially for research and this will certainly transform institutions, improve education quality and create a competitive advantage for the HEIs.

Acknowledgements

Disclaimer

References

Ahmad, M.S., Chui, C.T., Bassim, F.A. & Ziami, N.A., 2016, 'Evaluation of service quality of private higher education using service improvement matrix', *Procedia – Social and Behavioural Sciences* 224, 132–140. https://doi.org/10.1016/j.sbspro.2016.05.417

Aleixo, A.M., Azeiterio, U.M. & Leal, S., 2018, 'The implementation of sustainability practices in Portuguese higher education institutions', *International Journal of Sustainability in Higher Education* 19(1), 146–178. https://doi.org/10.1108/IJSHE-02-2017-0016

Aulawi, H., 2021, 'The impact of knowledge sharing towards higher education performance in research productivity', *International Journal of Sociotechnology and Knowledge Development* 13(1), 121–132. https://doi.org/10.4018/IJSKD.2021010109

Becker, S.A., Cummins, M., Davis, A., Freeman, A., Hall, C.G. & Ananthanarayanan, V., 2017, *NMC horizon report: Higher education edition*, The New Media Consortium, Austin, TX.

Beitler, M., 2013, *Strategic organizational change*, 3rd edn., Practitioner Press International, Greensboro, NC.

Bhattacharya, D.K., 2011, *Organisational change and development*, Oxford University Press, Oxford.

Bhattacherjee, A., 2012, *Social science research: Principles, methods, and practices*, USF, Open University Press, Tampa, FL.

Cheng, M.Y., Ho, J.S.Y. & Lau, M.P., 2016, 'Knowledge-sharing in academic institutions: A study of multimedia university Malaysia', *Electronic Journal of Knowledge Management* 7(3), 313–324.

Dee, J.R., 2016, 'Universities, teaching and learning', in L. Leistyle & U. Wilkesmann (eds.), *Organizing academic work in higher education: Teaching, learning and identities*, pp. 1–20, Routledge, New York, NY.

Gaspary, E., Moura, G. & Wegner, D., 2020, 'How does the organisational structure influence a work environment for innovation?', *International Journal of Entrepreneurship and Innovation Management* 24(2), 132–153. https://doi.org/10.1504/IJEIM.2020.105770

Hasanefendic, S., Birkholz, J.M., Horta, H. & Sijde, P., 2017, 'Individuals in action: Bringing about innovation in higher education', *European Journal of Higher Education* 7(2), 101–119. https://doi.org/10.1080/21568235.2017.1296367

Hiatt, J. & Creasey, T., 2013, *Change Management: The people side of change*, 3rd edn., Prosci Learning Centre Publications, Loveland, CO.

Jang, H. & Ko, I., 2014, 'The factors influencing communities of practice activities and their impact on relationship commitment and individual performance', *Journal of Knowledge Management* 18(1), 75–91. https://doi.org/10.1108/JKM-06-2013-0233

Johani, S. & Ramah, T., 2013, 'Reward system and knowledge-sharing behaviour in among Iranian academics', *Journal of Business and Innovation* 3(1), 87–94. https://doi.org/10.3844/ajebasp.2011.87.94

Lee, S.M. & Trimi, S., 2018, 'Innovation for creating a smart future', *Journal of Innovation and Knowledge* 3(1), 1–8. https://doi.org/10.1016/j.jik.2016.11.001

Leedy, P.O. & Ormrod, J.E., 2016, *Practical research: Planning and design*, 12th edn., Pearson, Boston, MA.

Nowacki, R. & Bachnik, K., 2016, 'Innovations within knowledge management', *Journal of Business Research* 69(5), 1577–1581. https://doi.org/10.1016/j.jbusres.2015.10.020

Oates, B.J., Griffiths, M. & Mclean, R., 2022, *Researching information systems and computing*, 2nd edn., Sage, London.

Obeidat, Y.B., Tarhini, A., Masadeh, R. & Aqqad, N.O., 2017, 'The impact of intellectual capital on innovation via the mediating role of knowledge management: A structural equation modelling approach', *International Journal of Knowledge Management Studies* 8(3), 273–298. https://doi.org/10.1504/IJKMS.2017.087071

Okeke, O.C., 2015, 'Tolerance to change, personality and age differences in acceptance of technological innovation among civil servants', Master's dissertation, University of Nigeria.

Podrug, N., Filipovic, D. & Kovac, M., 2017, 'Knowledge-sharing and firm innovation capability in Croatian ICT companies', *International Journal of Manpower* 38(4), 632–644. https://doi.org/10.1108/IJM-04-2016-0077

Ramjeawon, P. & Rowley, J., 2017, 'Knowledge management in higher education institutions: Enablers and barriers in Mauritius', *The Learning Organisation* 24(5), 1–24. https://doi.org/10.1108/TLO-03-2017-0030

Salkind, N., 2015, *Encyclopaedia of measurement and statistics*, 1st edn., SAGE, Thousand Oaks, CA.

Serdyukov, P., 2017, 'Innovation in education: What works, what doesn't, and what to do about it?', *Journal of Research in Innovative Teaching and Learning* 10(1), 4–33. https://doi.org/10.1108/JRIT-10-2016-0007

Stenius, M., Hankonen, N., Ravaja, N. & Haukkala, A., 2016, 'Why share expertise? A closer look at the quality of motivation to share or withhold knowledge', *Journal of Knowledge Management* 20(2), 181–198. https://doi.org/10.1108/JKM-03-2015-0124

Susilawati, E., Khaira, I. & Pratama, I., 2021, 'Antecedents to student loyalty in Indonesian higher education institutions: The mediating role of technology innovation', *Educational Sciences: Theory & Practice* 21(3), 40–56.

Swanger, D., 2016, *Innovation in higher education: Can colleges really change?* viewed 13 March 2019, from https://www.fmcc.edu/about/files/2016/06/Innovation-in-Higher-Education.pdf.

Teixeira, P., 2021, 'Global funding trends in higher education: The challenges of competition, selectivity, and differentiation', in H. Eggins, A. Smolentseva & H. de Wit (eds.), *Higher education in the next decade*, pp. 245–270, Bril, Boston.

Times Higher Education, 2022, *World university rankings*, viewed 10 February 2022, from https://www.timeshighereducation.com/world-university-rankings/2022/.

Verhulst, E. & Lambrechts, W., 2015, 'Fostering the incorporation of sustainable development in higher education. Lessons learned from a change management perspective', *Journal of Cleaner Production* 106, 189–204. https://doi.org/10.1016/j.jclepro.2014.09.049

Wang, S. & Noe, R.A., 2010, 'Knowledge-sharing: A review and directions for future research', *Human Resource Management Review* 20(2), 115–131. https://doi.org/10.1016/j.hrmr.2009.10.001

Zhang, Q., Ning, K. & Barnes, R., 2016, 'A systematic literature review on funding in higher education', *Frontiers of Education in China* 11(4), 519–542. https://doi.org/10.1007/BF03397139