Fostering Employee Engagement Through Systems Thinking in Universities of Technology: Organizational Members' Perspectives

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Article

Fostering Employee Engagement Through Systems Thinking in Universities of Technology: Organizational Members' Perspectives

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Abstract

Universities operate in an environment characterized by complexity, unpredictable challenges, rapid change and stakeholder demands. University employees are a key resource to achieve the strategic goals of the institution, linked to this complexity. Therefore, a conducive environment that fosters employee engagement in the university is critical. Employee engagement as a concept encompasses employees' positive attitude towards the organization and its values, whereby employees continuously improve how they perform their work to improve organizational effectiveness. Organizational effectiveness is the ability of the organization to proactively adapt and adopt new ideas to continuously improve its operations. The purpose of the study was to explore the application of Systems Thinking as a strategic approach to foster employee engagement across functional boundaries in Universities of Technology. Employee engagement is central to achieving the strategic goals of Universities of Technology. To achieve the objectives of this study, a qualitative research methodology was used. The study was underpinned by a constructivism philosophical worldview. A total of 15 participants were purposively selected from the employees of two universities of technology. Semi-structured face- to-face interviews were used to collect data. Thematic Analysis was applied to analyze data. The findings revealed that Systems Thinking would create a conducive environment to foster Employee Engagement across functional boundaries in universities of technology. In addition, the findings revealed the prevalence of silo practices in the universities of technology. Without Systems Thinking in the institution, departments generally operate in silos and there is no institutionalized philosophy to foster employee engagement, collaboration and knowledge sharing within and beyond functional boundaries.

Keywords: systems thinking; employee engagement; organizational effectiveness; knowledge sharing; functional silos

Introduction

Universities play a critical role in the socio-economic development of society (Godonoga & Sporn, 2022). These institutions are under constant pressure amidst fierce competition and must thus respond effectively to the needs of their stakeholders. The focus of this study was on university employees who are the key resource for the university to respond effectively to the needs of stakeholders. This paper commences with a delineation of a need to explore Systems Thinking as a strategic option to foster employee engagement in universities of technology. Hence, for universities to remain socially relevant, they need to evolve and respond to new and complex challenges. This requires new approaches as traditional approaches are no longer relevant to dealing with complexity and multi-stakeholder demands in a rapidly changing Higher Education environment. The problem with traditional management approaches is that they are informed by Reductionist principles. Systems Thinking is regarded as an alternative to the Reductionist approach. Remaining competitive requires a conducive environment for employee engagement at all levels and departments in an

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organization as this enhances productivity which leads to competitiveness. As a result, traditional management approaches must be supplanted to manage the complex and unpredictable challenges faced by universities of technology. Grewatsch, Kennedy and Bansol (2023) succinctly state that an organization's operations should not be isolated from social-ecological systems characterized by the highly dynamic environment. This is the case for both public and private organizations, including universities of technology. The purpose of study was to explore Systems Thinking as an effective alternative to traditional management approaches that are no longer relevant to deal with the complex and unpredictable factors in universities of technology. Systems Thinking is a concept that is generally applied to understand, manage and search for effective solutions to complex organizational challenges (Pilato & Voss, 2024). Without Systems Thinking in the institution, departments generally operate in silos and there is no institutionalized philosophy to foster employee engagement, collaboration and knowledge sharing within and beyond functional boundaries. Systems Thinking becomes a kernel of internal stakeholder or employee engagement in the university. Disengaged employees on the other hand lack the motivation and passion to help the organization to achieve strategic goals.

Certainly, the role of the university goes beyond knowledge production, as the mandate of universities includes community engagement (Ali et al., 2020). According to Kogetsidis (2021), Systems Thinking is an effective approach to respond to the complexity that organizations continue to face both internally and externally. It continues to draw attention because it empowers organizations with the ability to focus on the whole system instead of on its individual parts.

However, the central problem identified in this study is a lack of an institutionalized philosophy that promotes internal stakeholder engagement, knowledge sharing and cross-functional collaboration in the universities of technology to effectively respond to the needs of stakeholders and remain socially relevant. In other words, functional silos are prevalent in universities of technology. The prevalence of a silo mentality implies the absence of Systems Thinking in an organization (Bento, Tagliabue & Lorenzo 2020). Gerstein and Friedman (2016) posit that silos are prevalent in academic departments, which encumbers collaboration and interdisciplinary work. Jeske and Olson (2023) describe silo mentality as a phenomenon where people in an organization decide not to share information within and beyond functional boundaries.

Literature Review

Operationally, university employees play an important role in broad university functions, namely research, teaching and community engagement. University employees whose roles fall within the academic support ambit also play a critical role in helping the university to achieve its goals. In a university context, employees are generally categorized as administrative staff and academics (Sebola, 2017). According to Smith (2017), the term 'stakeholders' broadly includes customers, suppliers, governance bodies and staff. This study focuses on employees as internal stakeholders in the university context.

In addition, Sebola (2017) categorizes university internal stakeholders as university management, students and staff.

Hence, employee engagement is key in the university environment. According to Mbhele and de Beer (2021), employee engagement concepts cover employees' positive attitude towards the organization and its values, and where employees continuously improve how they perform their work to improve organizational effectiveness.

Generally, stakeholders are employees, suppliers and investors directly concerned with or having a direct interest in the operations of the organization (Muff, Dolacoste & Dyllick, 2021). As stated above, the focus of the study was on university employees. According to Reyeneke-Geyer and de Beer (2024), improved employee engagement plays a critical role and contributes to organizational effectiveness and productivity. Employee engagement has been identified as a key factor in a competitive environment for organizations to gain a competitive advantage (Zondo, 2020). Sebola

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(2017) posits an important point that to achieve university goals must be a collective mission. Therefore, Systems Thinking is necessary to foster this understanding across the university.

The Higher Education sector, like any other sector, has become highly disruptive. Shaik (2023) describes HEIs as the main societal hub for knowledge and learning. Consequently, HEIs are under constant pressure to respond to the needs of their stakeholders (Yadav, Bhatia & Yao, 2022). The universities are educational establishments involved in knowledge creation, community engagement and broadly societal development (Chankseliani & McCowan, 2021). Excellence becomes critical for institutions in the Higher Education sector. According to Abdelaziz (2022), excellence demonstrates high quality of services and processes to satisfy the needs of the stakeholders.

Systems thinking as a catalyst for enhancing Employee Engagement in the university

Systems Thinking originates from Systems Sciences, which initially wanted to establish the foundations for a general systems theory of all open systems, including amongst others, organizations, organs, families and communities (Midgley & Lindhult, 2021). Looking at a system of education in general, university education according to Wolhuter and Langa (2021) becomes a pinnacle of the national education project. Universities play a unique role in society. Systems Thinking is a holistic perspective that recognizes systems as a collection of various critical and interrelated components (Meyer & Pretorius, 2021). In essence, Systems Thinking is an effective alternative to conventional Reductionist thinking. Rossouw and Goldman (2023) accentuate that in an environment characterized by complex challenges, like in the university, it becomes necessary to explore solutions from different perspectives. This paper therefore argues for an internalized and institutionalized philosophy for university internal stakeholders to appreciate the interconnectedness and interrelationships between various units, and this ought to be working towards achieving the strategic objectives of the university. In this regard, Systems Thinking has been identified as a strategic option.

Applying systems to foster cross-functional collaboration in the university

A lack of cross-functional collaboration encumbers the overall efficiency of the organization (Fared & Darmawan, 2020). To respond to complex challenges, Rossouw and Goldman (2023) suggest the importance of developing solutions from diverse perspectives. In fact, this is a kernel of Systems Thinking. In their argument, the further suggest that Systems Thinking be incorporated into the curriculum at high school and higher education levels. This is important to empower future practitioners and leaders with such a skill to operate effectively in a complex and unpredictable environment. McAlister et al. (2022) describe Systems Thinking as an approach, discipline or conceptual framework or a way of thinking used to understand multi-perspectives, patterns and interrelationships. Importantly, as proffered above, cross-functional collaboration is critical for universities as the environment in which they operate is becoming increasingly competitive.

Systems Thinking is recognized as a vital skill for understanding the complex, dynamic and unpredictable factors faced by individuals, communities and organizations (Elsawah, Ho & Ryan, 2022). In addition, Systems Thinking is a perspective that recognizes systems as a collection of various and interrelated elements working together to achieve a common goal (Meyer & Pretorious, 2021). This understanding is key to continuously improving organizational performance and achieving business goals.

Application of Systems Thinking to improve organizational effectiveness in universities

Organizational effectiveness is the ability of the organization to proactively adapt and adopt new ideas to continuously improve its operations (Sheik, Tselepis & Reddy, 2023). Given the competitive environment in which public and private organizations operate, continuous improvement is critical. This applies to the universities as well. Systems Thinking on the other hand, provides a holistic and interdependent view of systems, including organizations (Alidrisi & Mohamed, 2022). This makes Systems Thinking effective to deal with complex, chaotic and unpredictable trends in organizations (Meyer & Pretorius, 2021). A failure to explore and adopt effective strategies will be catastrophic for universities of technology. According to Grewatch, Kennedy and Bansal (2023), Systems Thinking in recent years has received the attention of

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organizational scholars and practitioners. Given their role in modern society, universities are expected to produce knowledge for new technological innovations and the socio-economic development of society. Playing their role effectively means that they remain socially relevant.

The HEIs have adopted market-oriented strategies to gain competitiveness (Kanwar & Sanjeeva, 2022). It is further argued by Jones et al. (2021) that universities face great risk if they fail to meet the needs of society and those of their stakeholders.

The Higher Education sector is characterized by unpredictable market forces and global competition (Raaper, 2021). At the same time, universities must create conducive environments to improve student experience. According to Kanwar and Sanjeeva (2022), HEIs are recruiting students from national and international levels, thus making it necessary for HEIs to continuously improve their operations to retain and satisfy the needs of their students. Against this background, there is a need in universities for an institutionalized philosophy to foster stakeholder engagement. Hence, this study discusses Systems Thinking as a strategic option to create a conducive environment for internal stakeholder engagement in the university.

Materials and Methods

A qualitative research methodology was adopted to achieve the objectives of this study. Qualitative research is a scientific inquiry that offers depth and richness of data to understanding complex social phenomena (Clark et al, 2021, Lim, 2025). Constructivism was the philosophical worldview that informed this study. Constructivism shapes qualitative research and is appropriate for qualitative researchers to establish the meaning of a phenomenon from the views of the participants (Creswell & Creswell, 2023).

This was an appropriate research methodology for the generation of themes from the participants' responses. Participants in this study were permanent employees of the two selected UoTs. These were public institutions, and the staff complement comprised management, academic and administration staff. A total of 15 participants were interviewed.

Participants in the study were purposively selected. Purposive sampling allowed the researcher to select the best cases to answer the research questions (Saunders, Lewis & Thornhill, 2023). Participants signed the consent form and voluntarily participated in the study. Qualitative data was collected using semi-structured face-to-face interviews, which were conducted in participants' individual offices. Therefore, there was a conducive environment for the interviews to take place without any unnecessary disturbances. Kara (2019) posits that interviews are useful to understand the thoughts, feelings, experiences and knowledge of participants. Data was analyzed using thematic analysis. According to Dawson (2019), thematic analysis is highly inductive, with the researcher relying on themes that emerge from the data collected.

Findings and Discussion

Profile of participants

Participants were mostly in positions of authority and were operating at the strategic levels in their institutions. This was important as they understood the processes and practices in their institutions. Participants were asked to state their occupation at their respective institutions. Presented in Table 1 below is a breakdown of the participants in terms of their occupations.

Table 1. Profile of participants.

Participant	Occupation
P 1	Quality Specialist
P 2	Associate Professor
P 3	Associate Professor
P 4	Director Cooperative Education
P 5	Assistant Registrar

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P 6	Director
P 7	Manager
P 8	Student Development Officer
P 9	Writing Centre Co-ordinator
P10	Head of Department
P11	Head of department
P12	Deputy Dean
P 13	Deputy Dean
P 14	Health and Safety Officer
P15	Director: Special Projects

The characteristics of the participants reflected diversity in terms of their functional roles in the UoTs' context.

Discussion of the findings

This section discusses themes that emerged from the patterns identified during the process of data analysis and interpretation. In most instances, responses were similar. However, divergent responses were also captured.

Eradicating Functional silos through Systems Thinking in the UoTs

Based on their responses, participants highlighted the need to promote cross-functional collaboration in universities of technology. In other words, participants were of the view that a silo mentality was prevalent in the UoTs. Hence, employee engagement, which is fostered by Systems Thinking, is key to eradicate functional silos. This is possible because engaged employees are emotionally and intellectually committed to the organization. The question was intended to ascertain whether departments and faculties were still operating in silos in the UoTs.

One participant indicated that *he could not generalise his response, but he was sure that in his programme, people were still operating in silos*.

Explaining why departments and faculties were operating in silos, one participant was of the view that it was because departments and faculties did not want to lose their identities. This highlighted a lack of understanding that the university was a system with various departments and faculties or schools that should work together to achieve institutional goals. Systems Thinking is regarded as an alternative to mechanistic or reductionist approaches that are ineffective to deal with complex challenges (Randle & Stroink, 2018). A conducive environment is critical to promote internal stakeholder engagement and continuously improving organizational processes in the UoTs. Bhana and Suknunan (2021) state that a disengaged workforce is inimical to organizational effectiveness.

Systems Thinking as an alternative to an overarching Reductionist approach

Universities worldwide are continuously working towards attaining excellence in what they do (Brink, 2021).

Responses from the participants suggested that UoTs lacked an institutionalised and internalised Systems Thinking philosophy. The understanding is that with Systems Thinking, it was possible to view the institution from a holistic perspective. Moreover, it was critical to identify challenges and share best practices across the institution. Alidrisi and Mohamed (2022) state that Systems Thinking is a useful philosophy to overcome reductionism or traditional ways of thinking in an organisation. The results indicated a need to have an overarching institutionalised and internalised Systems Thinking philosophy in the UoTs to foster employee engagement. Furthermore, Alidrisi and Mohamed (2022) state that appreciating the interdependence of various sections is a source of enhancing organisational effectiveness. Hence, Bento, Tagliabue and Lorenzo (2020) confirm that functional silos were not helping the departments in an organisation to work together. Participants highlighted the importance of adopting Systems Thinking in universities of technology as there was a strong culture where employees focused on departmental or faculty goals instead of broader institutional goals. They were of the view that institutionalised and internalised Systems

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Thinking would be necessary to appreciate the interconnectedness of different sections in universities of technology.

The responses from participants were positive. One participant described Systems Thinking as a management approach that promotes multiple perspectives in dealing with complex challenges. To support their response, some comments were:

"Systems Thinking will help to break down functional boundaries."

"It will also help staff at every level of the institution to work towards a common goal."

Overall, participants agreed that the implementation of Systems Thinking would help UoTs to deal with complex challenges.

This is a classic example of processes informed by a reductionist approach as opposed to a Systems Thinking approach.

Institutionalizing Systems Thinking would foster the understanding that systems components should interact with each other and as a result, their interactions affect the system as whole. In the context of the study, systems components would be the various departments and faculties, whilst the system as a whole would be the university itself. Gilissen et al. (2021) emphasise the importance of understanding that the interaction of system components has a direct impact on the system. Cross-functional collaboration fostered by Systems Thinking would enhance the organizational effectiveness of universities of technology.

Knowledge sharing and Systems Thinking in the UoTs

Systems Thinking continues to receive the attention of the organization as it is regarded as an effective alternative to traditional approaches (Grewatsch, Kennedy & Bansal, 2023). Moreover, knowledge sharing is critical to improve operations and practices in an organization. Reductionist approaches are being supplemented because of their failure to deal effectively with complex and unpredictable situations. The findings indicated a need to create a conducive environment for employee engagement and knowledge sharing across the institution.

"They will be a lot more of collaboration between departments, faculties and students and develop collaboration on projects and research etc. rather than the current silo mentality".

"There will be synergy and sharing of resources"

Given the environment in which universities of technology operate, knowledge sharing is key. According to Mazorodze and Mkhize (2022), knowledge sharing is critical for institutional innovation and performance. To ensure the survival of an organisation, Saide et al. (2018) regard knowledge sharing as important to enhance organizational effectiveness. Accordingly, Systems Thinking is critical to promote interaction within and beyond functional boundaries.

Optimizing employee engagement through Systems Thinking to achieve strategic objectives in the UoTs

The findings of the study revealed that Systems Thinking would help UoTs to deal effectively with complex challenges. Grewatsch, Kennedy and Bansal (2023) view Systems Thinking as an effective alternative to Reductionism.

As stated above, this study focuses on internal stakeholder engagement, particularly employees. According to Sebola (2017), university employees are generally categorized as administrative and academic staff. As in any organization, university employees are the most important resource. Therefore, an engaged workforce is critical to improve organizational effectiveness and gain a competitive advantage.

"It will help us to achieve organisational effectiveness, breakdown functional boundaries and promote collaboration"

"It could help us to work towards an overall common vision of the institution".

Systems Thinking is necessary to create a conducive environment for employee engagement. According to Mbhele and de Beer (2021), internal stakeholder engagement is about promoting a positive attitude, work commitment and absorption. Cilliers and Bezuidenhout (2019) state that

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engaged employees are motivated; enthusiastic about their work; and more importantly, they are productive.

Multiple perspectives are critical to deal with complexity, as confirmed by Stowell (2021), who states that Systems Thinking mobilizes diverse stakeholders to take actions that improve the effectiveness of the whole system. In line with the responses from the participants and consulted sources from the literature, Systems Thinking is effective in dealing with complex challenges. Meyer and Pretorious (2021) point out that Systems Thinking is more appropriate to solve complex and chronic social problems.

Embracing Systems Thinking to foster Employee Engagement

This question was asked to ascertain whether participants would embrace Systems Thinking in their institutions. The responses were positive and participants indicated that they would embrace the implementation of Systems Thinking in their UoTs. In addition, participants were of the view that the application of Systems Thinking would be a strategic option to enhance employee engagement.

> *"I like to believe so because if you look at the understanding that we got, academic departments still think that they are superior compared to admin departments forgetting that we need each other. Without the admin, the academic business would not be, so there is still a gap that needs to be closed between the two, thus I am saying departments and faculties still believes in their own autonomy besides having the whole concept affecting everyone."*

> *"For sure because there seems to be a disconnect in terms of what is happening at the institutional, faculty and department levels*."

Organizational life, both private and public, is characterized by ambiguity and complexity. Against this backdrop, traditional ways need be supplanted. This is what organizations want to remain relevant. Therefore, Systems Thinking is worth considering by organisations that want to remain competitive. In other words, employee engagement creates a conducive environment for scalable university business and competitiveness.

Contribution of the study

The findings of the study make contributions to Systems Thinking theory by providing practical and theoretical insights for universities of technology to adapt, respond to the needs of stakeholders and foster employee engagement. In addition, the study provides practitioners and policymakers with theoretical and practical insights to apply Systems Thinking to improve organizational effectiveness.

Furthermore, the study highlights a need for UoTs to consider replacing management approaches that are failing to deal with the complex challenges. As with any other organisations, UoTs operate in an environment characterised by unpredictable and complex challenges. The findings of the study indicated that Systems Thinking was a necessary philosophy to deal with functional silos, promote employee engagement and to enhance organisational effectiveness in the UoTs. Systems Thinking was explored and the focus was on both strategic and operations aspects in terms of its application in the UoTs. Operational aspects included the promotion of cross-functional collaboration, employee engagement, as well as the challenges and opportunities for the application of Systems Thinking in the UoTs. Strategic aspects were about the adoption of Systems Thinking as a strategic option and driver for responding effectively to the needs of stakeholders and enhancing employee engagement in UoTs.

Study limitations and future research directions

This study focused on universities of technology, not other types of higher education institutions. Two universities of technology participated in the study. A cross-sectional design was used in the study, therefore further research should consider a longitudinal design to investigate this phenomenon in universities of technology.

Ethical requirements

The study was conducted in line with the ethical requirements of the institution. Necessary steps were followed to obtain ethical clearance before data was collected. A Letter of information was shared with the participants, informing them about their rights. Participants were assured of their

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anonymity as their identities were not going to be revealed, and data was for research purposes only. Therefore, the researcher acted ethically at every stage of this research project. Saunders, Lewis and Thornhill (2023) stress the importance of ethical conduct in research.

Conflict of interest

The author of this paper has no conflict of interest to declare, and no external funding was used to conduct this study.

Conclusion

In a rapidly changing higher education landscape, universities are under pressure to effectively respond to the needs of their stakeholders. Therefore, remaining competitive is essential. This study investigated the applicability of Systems Thinking as a strategic choice to foster Employee Engagement to continuously improve organizational efficiency in universities of technology. According to Diedericks, Cilliers and Bezuidenhout (2019), engaged employees are motivated; enthusiastic about their work; and more importantly, they are productive.

Furthermore, the higher education system has become interconnected and interacts with multiple other systems. It is therefore imperative for universities to redefine their role continuously in order to make a meaningful contribution to the socio-economic development of society. Central to the mandate of the universities of technology is to respond effectively to needs of the stakeholders and remain socially relevant. Overall, participants indicated that Systems Thinking would be a strategic option for universities of technology to adapt and remain socially relevant. Carayannis and Morawske-Jancelewicz (2022) warn that universities should be transformed to embrace uncertainty. Universities have a critical role to play in supporting glonacal development and the advancement of knowledge (Chankseliani, Qoraboyev & Gimranova, 2021). Therefore, to have internal stakeholders engaged, especially employees, is necessary. This study highlights the importance of applying Systems Thinking as a strategy to improve university operations and respond effectively to the needs of the stakeholders.

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