Journal of Infrastructure, Policy and Development (2022) Volume 6 Issue 2.
DOI: 10.24294/jipd.v6i2.1483

ORIGINAL ARTICLE

Reconstructing Abraham Maslow's hierarchy of needs towards inclusive infrastructure development needs assessment

***Bunmi Isaiah Omodan*[1*] *and Samuel O. Abejide*[2]**

[1] *Faculty of Education, Walter Sisulu University–Ibika Campus, Butterworth, South Africa*

[2] *Civil Engineering Department, Walter Sisulu University–Ibika Campus, Butterworth, South Africa*

ABSTRACT

This article focuses on Maslow's theory of hierarchy of needs, which has been criticized for lacking scientific evidence towards an effective municipal infrastructure management system. To ameliorate this, we contend that 21st-century management is not limited to the cardinal direction of motivation from the bottom hierarchy to the top hierarchy, as indicated by Maslow. We also argue that Maslow's hierarchy of needs theory did not take cognizance of innovations and situational advancements embedded in societal dynamism. Our argument is located within the principles of the interpretive paradigm. This paradigm enables us to analyze the deficiencies inherent in Maslow's hierarchy of needs within the 21st-century needs assessment perspective and re-establish the necessity for the novel motivation needs theory to cater for the changing world. In doing this, we engaged conceptual analysis as a method of analyzing or making sense of perceived complex concepts towards meaning-making. We conclude that an inclusive infrastructure needs assessment must be geared towards a reformed approach of people's satisfaction, which informs the necessity to reconstruct Maslow's hierarchy of needs theory. The needs satisfaction of the populace or community should be of prime importance, in addition to ensuring that people's satisfaction is met towards enhancing and promoting socio-economic growth and development.

Keywords*: Maslow's hierarchy of needs; infrastructure development; needs assessment*

1. Introduction

As long as people and organizations remain inseparable in society, the place of motivation for infrastructure development projects cannot be underrated. This is in line with the argument that motivation is the life wire of people and how they react to organizational productivity and performance (Lohela-Karlsson et al., 2022; Triswanto and Yunita, 2022). Not only organizations but people also act on a particular driving force in relation to needs satisfaction (Sulistiawan et al., 2022). That is, every action and inaction could be traced to people's interests and the endpoint of such stimulations, which many theories of motivation have addressed. Motivation theorists have attempted to explain why people behave the way they do. Prominent among these theories is the expectancy theory by Victor H. Vroom in 1984, the equity theory named after behavioral psychologist John Stacey Adams, and the needs satisfaction theory (Adams and Freedman, 1976; Maslow and Lewis, 1987; Vroom, 1964).

ARTICLE INFO
Received: June 14, 2022
Accepted: July 7, 2022
Available online: August 25, 2022

*CORRESPONDING AUTHOR
Bunmi Isaiah Omodan, Faculty of Education, Walter Sisulu University–Ibika Campus, Private Bag X3182, Eastern Cape Province, 4960, South Africa;
bomodan@wsu.ac.za

CITATION
Omodan BI and Abejide SO (2022). "Reconstructing Abraham Maslow's hierarchy of needs towards inclusive infrastructure development needs assessment". *Journal of Infrastructure, Policy and Development*, 6(2): 1483. doi: 10.24294/jipd.v6i2.1483

The expectancy theory suggests that people are motivated by the desire to achieve desired outcomes (Nikulina and Wynstra, 2022). They will be more motivated to work if they believe their efforts will achieve the desired outcomes. Equity theory suggests that people are motivated by a desire for fairness. They want to feel that they are being treated fairly compared to others. The needs satisfaction theory promoted by Abraham Maslow suggests that people are motivated by a desire to meet their needs (De Tasya et al., 2022). They will be more motivated to work if they believe their efforts will satisfy their needs.

Maslow's theory suggests that people are motivated by a hierarchy of needs. The most basic needs, according to Maslow, are the needs for food, shelter, and belonging. Self-esteem must be met before people can be motivated by higher-level needs, such as the need for self-actualization (Bozyiğit, 2021; Hopper, 2020; Valliani, 2021). This article puts forward the notion which recognizes that motivation theorists proposed many ways in which people could be motivated. However, none of them, including Abraham Maslow's hierarchy of needs, unravel the danger of demotivation within motivation and address ways to sustain motivators. Therefore, this study aims to foster needs satisfaction in infrastructure projects usually managed by municipal infrastructure agencies. Unlike other business organizations with unique organization and management structure systems, for infrastructure projects managed by government agencies, there is a depleting output value in the level of performance of infrastructure projects by municipal infrastructure agencies to meet community-based needs. Although, there is a need to improve infrastructure project impact and effectiveness towards sustainable development, this will greatly result in the accountability of stakeholders assigned to infrastructure projects. For this reason, it is essential to develop a robust intelligent platform to account for the ever-changing needs within each community.

Hence, the overarching need to improve efficiency and ensure satisfaction according to Maslow's hierarchy of needs is a question still to be resolved in the present dispensation. Following the dynamics of people's behavior and complexity in infrastructure projects, loopholes and weak triggers may arise and render Maslow's hierarchy of needs theory within the municipal infrastructure management system ineffective. The loopholes may be exacerbated by a couple of reasons that will be considered in the study.

This article focuses on Maslow's theory, which has been criticized for lacking scientific evidence and for generalizable importance in the identified hierarchies (Dutil, 2021; Navy, 2020). However, it remains one of the most popular theories of motivation due to its intuitive appeal, but the theory's intuition and assumptions seem to have been

defeated by the mirage of time and situations. What was obtainable when the theory was postulated may have informed the theory. Hence, this paper argues that 21st-century people's management is not limited to the cardinal direction of motivation from the bottom hierarchy to the top hierarchy. We, therefore, argue that Maslow's hierarchy of needs theory did not take cognizance of innovations and situational advancements embedded in societal dynamism. This is consistent with Reynolds (2015), who holds that the technological age has changed people in the way they think and react to issues and the level to which they find solutions to a problem. That is, life is a product of inevitable change and development, which informed the focus of this theoretical exploration of Maslow's hierarchy of needs. This study presents Maslow's theory of needs, identifies the lacuna, and offers a complementary idea towards developing a holistic motivation theory.

1.1. Research question

In order to achieve the above aim, the following research questions were raised to pilot the study:

- What are the loopholes in Maslow's hierarchy of needs theory on infrastructure projects managed by municipal infrastructure development agencies?
- How can the identified loopholes be resolved to advance needs satisfaction, while enhancing motivation and efficiency within the municipality?

1.2. Research objectives

In order to answer the above research questions, the following objectives were raised to guide the process of answering the questions:

- To identify the weakness and/or loopholes of Maslow's hierarchy of needs theory on infrastructure projects within the municipal infrastructure management system.
- To develop a conceptual framework on the hierarchy of needs to meet 21st-century motivational needs and enhance the efficiency of infrastructure development.

2. Methodological philosophy of argument

The study is theoretical and adopted an interpretive worldview as a lens to unravel the narrowness of Maslow's hierarchy of needs. This paradigm, according to Muzari, Shava, and Shonhiwa (2022), is an approach that emphasizes the need to understand the meanings that people attach to their actions and experiences. Researchers in this school of thought believe that reality is socially constructed and that there is no single objective truth (Appe and Dodge, 2022; Ma and Ma, 2022). Instead, they focus on understanding the individual perspective of those involved in a particular situation via observation, inept interrogation, and interactions, among others. This paradigm considers that reality and truth are multiple and dependent on the view and situational nature of the people (Dhakal, 2022). This is relevant to our argument because it recognizes the people's views and opinions on issues regarding infrastructure projects and respects various realities towards needs satisfaction as per the expectancy level to be attained by municipal management systems. This enables us to analyze deficiencies inherent in Maslow's hierarchy of needs from the 21st-century needs assessment perspective and re-establish the necessity for novel motivation needs theories to cater to the changing world. The paradigm is best for this argument because it enhances

an understanding and interpretation of issues with argumentative meaning-making.

This article presents Abraham Maslow's theory of motivation, "Maslow's hierarchy of needs", as the bone of contention. Assumptions and interpretations, together with missing links and a diagrammatic representation of arguments, were made. We engaged with conceptual analysis as a method of analyzing or making sense of perceived complex concepts towards meaning-making. This was done by breaking the concept into more manageable parts and examining the relationships between these parts. By doing this, we can better understand the concept as a whole and how it fits into our wider understanding of the world. Conceptual analysis can be a useful tool for clarifying our thoughts and ideas and for helping us to communicate our ideas more effectively (Laurence and Margolis, 2003). It also helps to identify potential problems or areas of confusion and find ways to resolve them (Holden, 2005). In short, conceptual analysis can be a valuable tool for understanding complex concepts and making sense of our perceptions.

3. Presentation of Abraham Maslow's hierarchy of needs

Abraham Maslow's hierarchy of needs is one of the most popular theories of motivation. The theory posits that people are motivated to fulfill five primary needs: physiological, safety, love and belonging, esteem, and self-actualization (Gawel, 1996; Hopper, 2020; Maslow, 1943; McLeod, 2007; Navy, 2020). According to Maslow's hierarchy of needs, people must first meet their physiological needs (such as food, water, and shelter) before other needs. Once these physiological needs are met, people move up the hierarchy, focusing on safety needs (including security and protection), love and belonging needs (including friendship, intimacy, and social status), esteem needs (including self-respect and recognition from others), and finally self-actualization needs

Figure 1. Maslow's hierarchy of needs model (Hester, 2017)

(including creativity, personal growth, and fulfillment) (Maslow, 1943; Maslow and Lewis, 1987; Nurlela et al., 2022). See below the diagrammatic representation of Malow's hierarchy of needs adapted from Hester (2017).

Based on **Figure 1**, the first stage in the hierarchy of needs theory, according to Maslow, is physiological needs, which are essential for survival and the most basic needs that must be met for an individual to thrive. The hierarchy of needs theory posits that these physiological needs form the base of a hierarchy, with individuals striving to meet their most basic needs before moving on to higher-level needs. Such needs are food, water, air, sleep, and shelter (Tripathi, 2018; Omodan, 2022). According to the theory, all of these needs must be met for an individual to function properly. We also argue alongside Maslow that meeting these needs is critical for physical and mental health. Individuals who do not have their physiological needs met may experience medical problems, such as dehydration or malnutrition. They may also suffer from psychological problems, such as anxiety, which may affect their productivity.

The second level is safety and security needs, including security and protection. Safety is essential for humans, as it allows people to feel secure and protected in their work environment (Kim and Kim, 2017). Without safety, we would be constantly worried and anxious, unable to focus on anything else. The position is that when individuals are content with their fundamental requirements, they begin to focus on more important issues, such as job stability, safety, life, and belongings, with an argument that when these needs are satisfied, the next level in the hierarchy is activated.

The third stage of the hierarchy of needs theory is love and belongingness needs. This stage includes needs such as affection, friendship, intimacy, acceptability, respect, affiliation, and a sense of belonging (Shi and Lin, 2021; Suyono and Mudjanarko, 2017). According to Maslow, these needs are important for people to feel connected to others and have a sense of belonging. People in this stage often seek relationships with others, and they may be more likely to go to extra lengths to feel accepted by a group. Hence, when these are met, the urge for esteem needs is activated.

The fourth stage of the hierarchy of needs theory is esteem needs. According to Maslow, esteem needs are those that involve a person's feelings of respect and worth from others, which can be met through achievements, status, power, or simply being liked and admired by others (Truman Am et al., 2017; Yunadi et al., 2020). Meeting these needs often leads to feelings of confidence and self-esteem. As long as we agree with Maslow, we also argue that people typically have different types of esteem needs. Some people may place a high value on the opinions of others, while others may prize independence and self-reliance. Still, others may view themselves as primarily valuable because they contribute to society or other larger causes. Whatever the case, esteem needs are important for psychological well-being and self-actualization.

The fifth and the last stage of Maslow's hierarchy of needs theory is self-actualization. This stage is reached when a person has fulfilled all needs up to that point and can focus on personal growth and fulfillment (Tripathi, 2018). Self-actualized people are creative, happy, and productive. They are able to find meaning in life and see themselves as part of something bigger than themselves. In any organization, people who reach the stage of self-actualization can live their lives to the fullest and find fulfillment in their work and relationships. They have a strong sense of purpose and can make a difference in the world.

Therefore, this theory makes scholars and practitioners believe that Maslow's hierarchy of needs is a useful tool for understanding how people are motivated at every point of their lives in their workplaces. However, it should be noted that the theory is not without its criticisms. For example, some argue that the hierarchy is too linear and does not consider the diversity of human needs (Fallatah and Syed, 2018). Others claim that the theory does not explain why and how people are motivated to meet certain needs (McCleskey and Ruddell, 2020). But we argue that Maslow did not consider 21st-century people's management, which is multifaceted, innovative, and advanced with cognizance of dynamic societies. Also, the theory does not explain at what point a motivator becomes a demotivator and at what point motivation needs consolidation to avoid leading to demotivation in all systems of management, including infrastructure management systems. The next section discusses the implication of Maslow's hierarchy of needs on infrastructure project development.

3.1. Maslow's theory and infrastructure project development approach

As seen in present-day operations and management systems, especially at the municipal level, there is a lack of performance and efficiency of service delivery in projects. Compared with other business organizations, which are properly organized with definite structures, there exists a depleting output value in the level of performance of projects; such aspects range from construction projects, service delivery, and operations within municipal infrastructure agencies. A key aspect being considered in most project offerings stems from the construction industry. This fraction constitutes 60 percent of most infrastructure projects. Over the years, the construction industry faces numerous challenges and problems, especially in South Africa (Hussin et al., 2013). However, the main criterion for the success of any project is to deliver projects without time or cost overrun. Although, there is a need to improve efficiency and performance, since the construction industry is majorly labor-intensive; the need for improvement in this regard could be associated with many streams, ranging from human resource management (HRM), inclusion of lean construction methods, optimized green technologies to improve construction, efficient service delivery, and the use of probabilistic and stochastic response algorithms to optimize efficiency and output of services rendered (Besklubova and Zhang, 2019; Hatzigeorgio and Manoliadis, 2017). This means that, for example, HRM practices need to be deployed within the construction industry environment, since these strive to achieve, maintain, and improve project performance by showcasing sustainable performance attributes (Ishak et al., 2010). The process of recruiting, developing, and maintaining a capable and motivated labor force to support construction project goals would be the aim of effective human resource management.

In South Africa, especially when focusing on most municipal infrastructure projects, there are several challenges facing the construction and building sector that affects the needs satisfaction of consumers (Chen et al., 2010; Enshassi et al., 2016). The effects of such challenges are a negative impact on the GDP, increased unsatisfaction regarding project delivery, increased unemployment, and others. These effects can culminate in an unstable economy, causing unrest amongst the beneficiaries. In general, several factors identified are service delivery from construction companies, poor government policies and strategies, availability of funding resources to cater to budget allocations, institutional backing, and support from collaborating industries. Although, the growth, development, and efficient performance of a community rely on structurally operated and proper management of funding resources.

The necessity of an inclusive and interactive infrastructure system to ensure the efficient implementation of needs satisfaction of the beneficiaries requires the reconstruction of Maslow's theory needs following recent developments within the construction industry. These developmental changes are a cumulative effect of new industrial revolutionary trends, as seen by Schwab (2017).

4. Identification of narrowness or loopholes in municipal infrastructure projects' delivery and efficiency

For the purpose of this study, a number of loopholes have been identified: lack of qualified technical staff in strategic management offices within the municipal infrastructure organogram, poor human resource management techniques, poor construction method techniques, lack of unemployment intervention programs, political risks and economic instability, stakeholder participation in infrastructure projects, discrepancies in project contract submission documents, complexity of projects, inadequate planning methods, poor training and experience of stakeholder managers, poor training programs for community beneficiaries, and inadequate sensitization on infrastructure projects and material-based (Lee et al., 2010; Li et al., 2012). However, many communities function independently of one another in order to foster efficient service delivery. Such independence is primarily focused on ensuring a quick and reactive response on infrastructure delivery and efficient output on project service renderings. The latter has gained popularity in most sectors of the economy, especially infrastructure projects by municipal infrastructure agencies. The mandate of most municipal agencies ensures efficiency, which is a factor that results in inclusive satisfaction amongst the stakeholders and beneficiaries of needs identified (Cleves Jr. and Dal Gallo, 2012). The above factors have been mapped out strategically to develop a framework that fosters inclusive infrastructure needs assessment to bring about satisfaction.

4.1. Presentation of argument and analysis of issues

The need to ensure satisfaction from the traditional project management perspective centers on identifying the time, scope, and cost required for any service to be rendered or on any infrastructure project. Koskela and Howell (2002) highlighted these factors as key parameters to ensure efficient management of project delivery offerings. As presented, this management approach focuses on applying knowledge skills, tools, and techniques to project activities in order to meet or exceed stakeholder needs and expectations to ensure satisfaction. A project life-cycle delivery approach to ensure efficiency is presented by (Project Management Institute, 2008). This structures a project or service as follows: initiation process, planning process, execution process, monitoring and control process, and lastly, project close-out process. This means that most problems and loopholes in infrastructure projects need to be properly scrutinized and evaluated. The evaluation is aimed at identifying which factor has the highest negative effect on the satisfaction and performance of a project. The factors as previously presented can be further categorized as bidding gaps, waste elimination, lean project delivery system, lean construction tools and techniques, scope and work plan, green technologies in operations and control, efficient supply chain management systems, and monitoring and evaluation of intervention programs (Koskela and Howell, 2002; Riecke, 2004). Most projects will be of the order as presented in **Figure 2**. This means that, along with each activity of intervention, the needs to be met should be evaluated and monitored through a process implementation phase. The program's validity and efficiency will result in an effective infrastructure

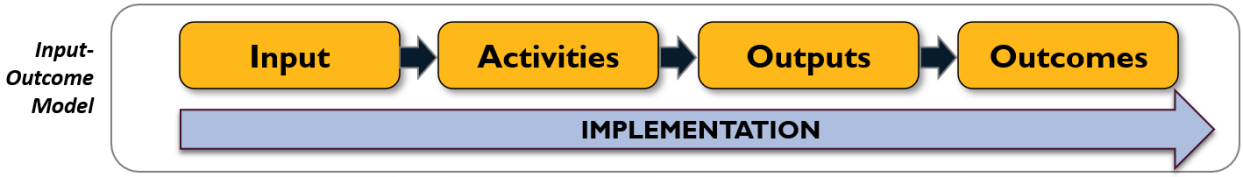

Figure 2. Implementation phase of Maslow's needs assessment

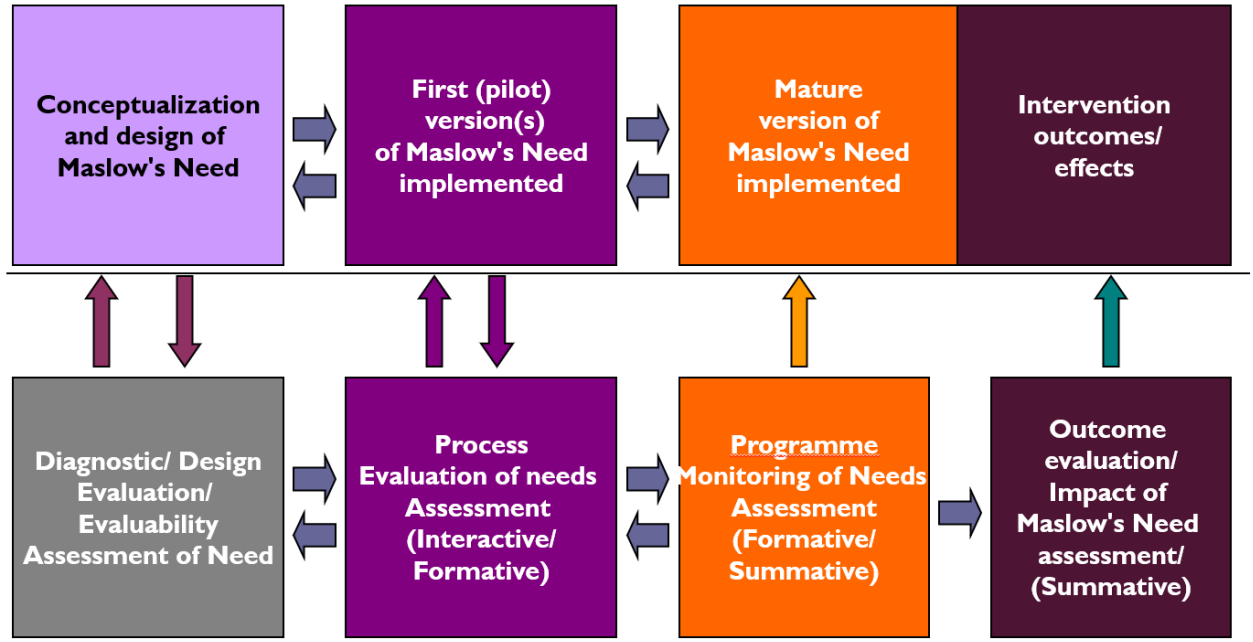

Figure 3. Maslow's needs assessment implementation and monitoring program

intervention based on the needs satisfaction of the users or population.

A pre-phase to the reconstruction of Maslow's hierarchy of needs in this study proposes a model which functions in the form of an inclusive process with system monitoring threads along the line of the process. For example, for a given project, it is proposed that the project behaves in the outline as presented in **Figure 3**.

Usually, service quality measurement is a major criterion to measure the efficiency and effectiveness of a particular service delivery intervention. This will, in most cases, focus on the customers' or people's perception and satisfaction (Urban, 2013). This means that there is a need to combine the needs satisfaction component and perceived customer or user satisfaction. In most projects, when a particular needs intervention is proposed to be satisfied by the government, it takes quite a while between the time the needs intervention is approved and implemented. Within this period, there is a 95% probability that such a need might be obsolete. This means that even when the need is now satisfied, there is no impact on the users or people for whom the need satisfaction was implemented. This can be caused by many factors, ranging from new needs resulting from old needs to the delay in the satisfaction of a need promoting deficiencies in other aspects of community needs and resulting in a new need. This statement might contradict itself, but this is usually practical in most communities. Suppose a small road section is to be repaired as a need to promote

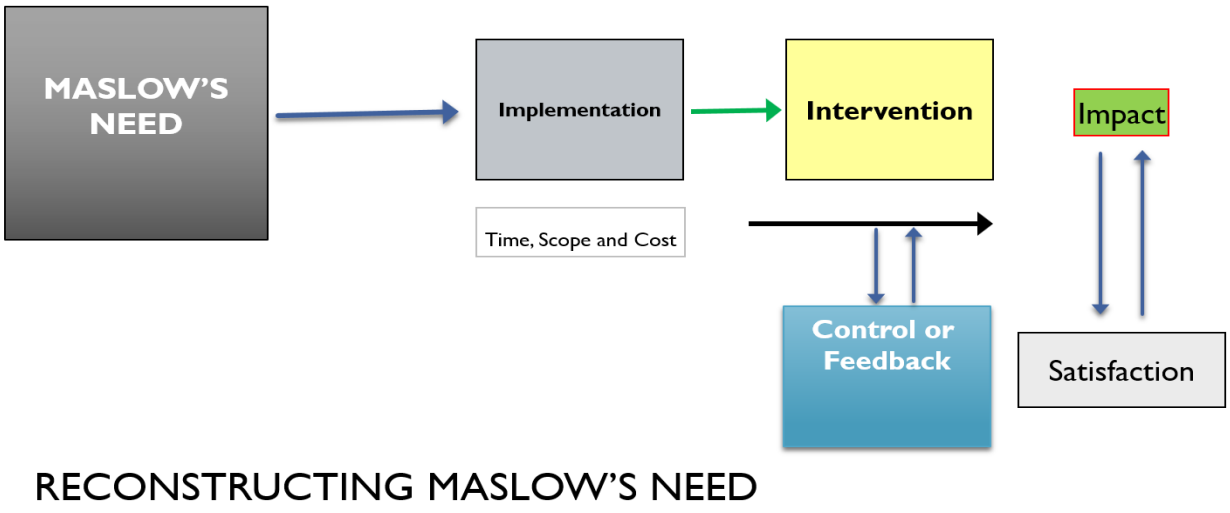

Figure 4. Reconstruction of Maslow's need assessment for inclusive infrastructure development

sustainable communities; in that case, a delay in meeting the repair of the road might result in further deterioration of the road, which will then result in a need for the rehabilitation of the road or the need to promote the development of an alternative route or carriageway to cater for transporting people based on new needs for development and socio-economic growth.

4.2. Reconstruction of Maslow's hierarchy to formulate motivational needs assessment and satisfaction

The previous investigations highlighted in this study provided an introduction to an inclusive infrastructure project satisfaction in line with Maslow's theory. The reconstruction of this theory is proposed to follow an adaptive approach towards needs satisfaction and not merely focusing on the hierarchy of needs in terms of singularity but in terms of an inclusive green technique that addresses solving a particular need within the community, while achieving efficiency over a longer time (Srinivasu and Srinivasa Rao, 2013). The diagram in **Figure 4** describes the redesign of Maslow's needs having an implementation phase and an intervention phase that is usually time-dependent (National Treasury, 2015). During this process, there is a need to monitor the impact of such an intervention. This can be in the form of setting controls within the program intervention phase. Proper monitoring of this phase aims to ensure that satisfaction is met not just by implementing the need but by ensuring that the need, when implemented, is still valid and able to satisfy the needs of the community or people (Global Infrastructure Investor Association and PwC, 2017).

5. Conclusion and recommendations

This study aimed to explore the limitation of Maslow's hierarchy of needs theory in accommodating multifaceted motivational needs. To achieve this, a review of relevant literature was conducted. The findings indicated that while the theory is useful in explaining some aspects of motivation, it does not adequately address the complex nature of human motivation. We conclude that inclusive infrastructure needs assessment must be geared towards a reformed approach to

people's need satisfaction. Although there are government political policies and principles relating to infrastructure development framework and plans, the necessity to ensure the needs satisfaction of the populace or community should be of prime importance. However, should a need pass through the supply chain management process before implementation or after approval, there is a necessity to reassess that the need is in line with the current situation of the community to ensure that when such intervention is implemented, it is not obsolete and people's satisfaction is met towards enhancing and promoting socio-economic growth and development. Hence, Maslow's hierarchy of needs is reconstructed.

Conflict of interest

No conflict of interest was reported by both authors.

References

Adams JS and Freedman S (1976). "Equity theory revisited: Comments and annotated bibliography". *Advances in Experimental Social Psychology*, 9: 43–90. https://doi.org/10.1016/S0065-2601(08)60058-1

Appe S and Dodge J (2022). "Interpretive engagement and the study of civil society networks: An illustration of interpretive methods". *VOLUNTAS: International Journal of Voluntary and Nonprofit Organisations*, Advance online publication. https://doi.org/10.1007/s11266-021-00434-7

Besklubova S and Zhang X (2019). "Improving construction productivity by integrating the lean concept and the Clancey Heuristic model". *Sustainability*, 11(17): Art. 4535. https://doi.org/10.3390/su11174535

Bozyiğit S (2021). "Evaluation of Maslow's hierarchy of needs theory within the context of COVID-19 pandemic". In: Gülmez M (Ed.), *Understanding the Consumer Behaviour During Covid Pandemic*, pp. 51–68.

Chen Y, Okudan GE and Riley DR (2010). "Sustainable performance criteria for construction method selection in concrete buildings". *Automation in Construction*, 19(2): 235–244. https://doi.org/10.1016/j.autcon.2009.10.004

Cleves Jr JA and Dal Gallo L (2012). "Integrated project delivery: The game changer" [Presentation]. *2012 Annual Meeting, American Bar Association Forum on the Construction Industry*.

De Tasya HZA, Lalu H and Salma SA (2022). "Designing reward and punishment systems to spur awareness of the use of personal protective equipment on PT. XYZ workers". *eProceedings of Engineering*, 9(1): 36–43.

Dhakal PK (2022). "Pedagogical reforms needed in virtual learning in mathematics: Learners' perspectives". *Journal of Social Transformation and Education*, 3(1): 33–41.

Dutil P (2021). "What do people want from politics? Rediscovering and repurposing the Maslow hierarchy to teach political needs". *Journal of Political Science Education*, 18(1): 138–149. https://doi.org/10.1080/15512169.2021.1987259

Enshassi A, Kochendoerfer B and Al Ghoul H (2016). "Factors affecting the sustainable performance of construction projects during project life cycle phases". *International Journal of Sustainable Construction Engineering and Technology*, 7(1): 50–68.

Fallatah RHM and Syed J (2018). *Employee Motivation in Saudi Arabia: An Investigation into the Higher Education Sector*. Palgrave Macmillan. https://doi.org/10.1007/978-3-319-67741-5_2

Gawel JE (1996). "Herzberg's theory of motivation and Maslow's hierarchy of needs". *Practical Assessment, Research, and Evaluation*, 5: Art. 11. https://doi.org/10.7275/31qy-ea53

Global Infrastructure Investor Association and PwC (2017). *Global Infrastructure Investment: The Role of Private Capital in the Delivery of Essential Assets and Services*. PwC.

Hatzigeorgiou A and Manoliadis O (2017). "Assessment of performance measurement frameworks supporting

the implementation of lean construction". *Proceedings of the 25th Annual Conference of the International Group for Lean Construction*, 2: 153–160. https://doi.org/10.24928/2017/0073

Hester T (2017, May 3). "Why 'financial freedom' means something different to me". *Our Next Life*. https://ournextlife.com/2017/05/03/freedom/

Holden LM (2005). "Complex adaptive systems: A concept analysis". *Journal of Advanced Nursing*, 52(6): 651–657. https://doi.org/10.1111/j.1365-2648.2005.03638.x

Hopper E (2020, May 4). "Maslow's hierarchy of needs explained". *ThoughtCo*. https://www.thoughtco.com/maslows-hierarchy-of-needs-4582571

Hussin JM, Rahman IA and Memon AH (2013). "The way forward in sustainable construction: Issues and challenges". *International Journal of Advances in Applied Sciences*, 2(1): 31–42.

Ishak NB, Eze UC and Ling LS (2010). "Integrating knowledge management and human resource management for sustainable performance". *Journal of Organizational Knowledge Management*, 2010: Art. 322246. https://doi.org/10.5171/2010.322246

Kim JS and Kim JM (2017). "The relation between housing needs and housing function according to Maslow's theory of needs". *KIEAE Journal*, 17(4): 13–19. https://doi.org/10.12813/kieae.2017.17.4.013

Koskela L and Howell G (2002). "The underlying theory of project management is obsolete". *Proceedings of the PMI Research Conference*, 293–302.

Laurence S and Margolis E (2003). "Concepts and conceptual analysis". *Philosophy and Phenomenological Research*, 67(2): 253–282. https://doi.org/10.1111/j.1933-1592.2003.tb00290.x

Lee HW, Tommelein ID and Ballard G (2010). "Lean design management in an infrastructure design-build project: A case study". *Proceedings of the 18th Annual Conference of the International Group for Lean Construction*, 113–122.

Li H, Arditi D and Wang Z (2012). "Transaction-related issues and construction project performance". *Construction Management and Economics*, 30(2): 151–164. https://doi.org/10.1080/01446193.2012.655254

Lohela-Karlsson M, Jensen I and Björklund C (2022). "Do attitudes towards work or work motivation affect productivity loss among academic employees?" *International Journal of Environmental Research and Public Health*, 19(2): Art. 934. https://doi.org/10.3390/ijerph19020934

Ma J and Ma Y (2022). "The discussions of positivism and interpretivism". *Global Academic Journal of Humanities and Social Sciences*, 4(1): 10–14. https://doi.org/10.36348/gajhss.2022.v04i01.002

Maslow AH (1943). "A theory of human motivation". *Psychological Review*, 50(4): 370–96. https://doi.org/10.1037/h0054346

Maslow A and Lewis KJ (1987). "Maslow's hierarchy of needs". *Salenger Incorporated*, 14(17): 987–990.

McCleskey JA and Ruddell L (2020). "Taking a step back—Maslow's theory of motivation: A Christian critical perspective". *Journal of Biblical Integration in Business*, 23(1): 6–16.

McLeod S (2007, April 4). "Maslow's hierarchy of needs". *Simply Psychology*. https://www.simplypsychology.org/maslow.html

Muzari T, Shava GN and Shonhiwa S (2022). "Qualitative research paradigm, a key research design for educational researchers, processes and procedures: A theoretical overview". *Indiana Journal of Humanities and Social Sciences*, 3(1): 14–20.

National Treasury (2015). *National Treasury Standard for Infrastructure Procurement and Delivery Management*. Department of National Treasury, Republic of South Africa.

Navy SL (2020). "Theory of human motivation—Abraham Maslow". In: Akpan B and Kennedy TJ (Eds.), *Science Education in Theory and Practice*, pp. 17–28. Springer. https://doi.org/10.1007/978-3-030-43620-9_2

Nikulina A and Wynstra F (2022). "Understanding supplier motivation to engage in multiparty performance-based contracts: The lens of expectancy theory". *Journal of Purchasing and Supply Management*, 28(2): Art. 100746. https://doi.org/10.1016/j.pursup.2022.100746

Nurlela N, Natsir M and Ariani S (2022). "Maslow's hierarchy of human needs of the main character in Abraham Lincoln's Vampire Hunter film (2012)". *Jurnal Ilmu Budaya*, 6(1): 265–273.

Omodan BI (2022). "Analysis of 'hierarchy of needs' as a strategy to enhance academics retention in South African universities". *Academic Journal of Interdisciplinary Studies*, 11(3): 366–376. https://doi.org/10.36941/ajis-2022-0089

Project Management Institute (2008). *A Guide to the Project Management Body of Knowledge* (4th Ed.). Project Management Institute.

Riecke VR (2004). "Public construction contracting: Choosing the right project-delivery method". *Popular Government*, 70(1): 22–31.

Reynolds NS (2015). "Making sense of new technology during organisational change". *New Technology, Work and Employment*, 30(2): 145–157. https://doi.org/10.1111/ntwe.12045

Schwab K (2017). *The Fourth Industrial Revolution.* Crown Publishing Group.

Shi Y and Lin X (2021). "A test of Maslow's hierarchy of needs concept by a correlational model among adult learners" [Presentation]. *American Association for Adult and Continuing Education 2020 Conference*. https://eric.ed.gov/?id=ED611655

Srinivasu B and Srinivasa Rao P (2013). "Infrastructure development and economic growth: Prospects and perspective". *Journal of Business Management and Social Sciences Research*, 2(1): 81–91.

Sulistiawan J, Moslehpour M, Diana F and Lin P-K (2022). "Why and when do employees hide their knowledge?" *Behavioral Sciences*, 12(2): Art. 56. https://doi.org/10.3390/bs12020056

Suyono J and Mudjanarko S (2017). "Motivation engineering to employee by employees Abraham Maslow theory". *Journal of Education, Teaching and Learning*, 2(1): 27–33.

Tripathi N (2018). "A valuation of Abraham Maslow's theory of self-actualisation for the enhancement of quality of life". *Indian Journal of Health and Well-being*, 9(3): 499–504.

Triswanto H and Yunita L (2022). "The influence of intrinsic motivation and extrinsic motivation on employee performance productivity of PT. Weigh Deli Indonesia". *Journal of Economics and Business*, 2(2): 155–161. https://doi.org/10.122020/jecombi.v2i2.22

Truman AM Y, Kuncara SD and Setyowati R (2017). "Analysis of the main character's needs in Life of Pi movie using Maslow's theory". *Ilmu Budaya: Jurnal Bahasa, Sastra, Seni dan Budaya*, 1(1): 43–58. http://dx.doi.org/10.30872/jbssb.v1i1.669

Urban W (2013). "Perceived quality versus quality of process: A meta concept of service quality measurement". *The Service Industries Journal*, 33(2): 200–217. https://doi.org/10.1080/02642069.2011.614337

Valliani K (2021). "Improving palliative care with Maslow's hierarchy of needs". *British Journal of Cardiac Nursing*, 16(10): 1–8. https://doi.org/10.12968/bjca.2021.0052

Vroom VH (1964). *Work and Motivation*. Wiley.

Yunadi A, Kuncara SD and Valiantien NM (2020). "Sophie's needs in Rooftoppers novel by using Maslow's theory of hierarchy of human needs". *Ilmu Budaya: Jurnal Bahasa, Sastra, Seni dan Budaya*, 4(1): 130–144.