

SMEs Managing Organisational Knowledge In The 4IR Era: A Case Study Of Developing Countries

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Abstract

At the current moment, the whole world is talking about the implementation of the fourth industrial revolution and the impact it will have on everyone including businesses, the government, academic fraternity and the general population at large. Academics and businesses are working on finding a road map for implementing this new phenomenon. However, it is of paramount importance to understand that organizational knowledge needs to remain in the organisation. Therefore, the question is how can SMEs manage the organizational knowledge in the 4th Industrial era? This question is posed because many things will change because of the 4IR. This is a qualitative approach where numerous articles were reviewed and a framework was proposed. It was discovered that despite a number of challenges that SMEs are encountering in developing countries such as lack of finance, lack of skilled employees and key employees leaving the organisation, they will have to be participants in the 4IR era. This study is original because there is limited research in the adoption of the 4IR in SMEs and managing knowledge during the 4IR era. Further research must be done on the technological techniques that can be used by SMEs to managing knowledge.

Keywords

Keywords: 4IR; Knowledge Management, SMEs; Robotics

1. Introduction

It is a fact that to this current date the world has witnessed three industrial revolutionaries known as industry 1.0, industry 2.0 and industry 3.0. At the current moment, the whole world is talking about the fourth industrial revolution and it is at its infancy phase. The Germans are the ones who first introduced the fourth industrial revolution in 2011 at the Hannover fair in Germany [12]. It is important to understand that after Germany has introduced their strategy of automating, digitalisation and the use of robotics countries wanted to be part of that strategy. This German's strategy is known as the fourth industrial revolution (4IR). There were countries such as United States of America, Canada, Denmark, France, and China amongst others who were the first to follow the strategy. However, 4IR is a new strategy, which academics, policy makers, executives and the industry are still grappling with. They are still looking to find a road map so that the industry can actively participate in this strategy. This fourth industrial revolution elements are as follows: Artificial Intelligence, Big Data, Internet of Things, Advanced Manufacturing, Additive Manufacturing, Augmented reality, Simulation, Cloud computing and Cyber security. However, not all of these elements are key to 4IR. Only a subtle of the elements of 4IR drive this German's strategy (digitalisation and automation). The drivers of this strategy (4IR) are as follows: Artificial Intelligence and Big Data [2].

As much as the concept of automating and digitalisation sounds interesting to most developed countries and big organisations, there are Small businesses that will be challenged by this especially in emerging markets and developing markets. SMEs contributes significantly into our GDP (Gross Domestic Product) in developing countries and

emerging markets such as South Africa. They contribute up to forty five percent into the GDP into our country. They employ more than sixty percent of our labour force and over ninety-seven percent of our businesses are regarded as SMEs. However, these SMEs encounter several challenges such as lack of highly skilled employees, limited technological resources and lack of finances amongst other challenges [14].

[4] states that knowledge can be added only if it is shared. We have two type of knowledge in the organisation. The first one is elicited knowledge and tacit knowledge. Elicited knowledge is knowledge that can be stored in computer files, drawers, shelves or in short it can be documented. While the second one is regarded as tacit knowledge which is one that is very difficult to share because it is rooted in human beings [9]. The unfortunate part of this is that there is limited literature that looks at Knowledge Management from SMEs perspective. Majority of Scholars reviewed Knowledge Management from public organisations and big companies perspective. It has been stated several times that Knowledge Management can improve the competitiveness of the organisation. This made organisations to consider knowledge management as a strategy of improving competitiveness. However, it remains difficult to ensure that employees in organisations share the knowledge they have with their colleagues [3]. This study will look at the contributing factors to Knowledge sharing in SMEs and the impact that fourth industrial revolution will have on knowledge sharing in SMEs. The study will further look at factors that may lead employees not sharing their organisational knowledge in the SMEs sector.

2. Problem identification and basic principle

It has been alluded that some employees are not willing to share their knowledge with their colleagues because they want to have a competitive advantage over their employees [10]. With the rise of automation and digitalisation or what is called 4IR, it has been alluded several times that some of the jobs will be done by robots [14], and some employees will be working alongside robots, so how will robots and its co-employees who happen to be human beings be able to effectively share knowledge?

2.1. Objectives of the study

This study aims to explore the possible barriers to sharing organisational knowledge. This will help to find out what SMEs should be aware of should they wish to share knowledge management. The second objective of this study is formulate a framework that can be used to share knowledge in the fourth industrial revolution.

2.2. Similar studies

[3] conducted a study at Malaysia focusing on knowledge management in SMEs. They reviewed different perspectives about knowledge sharing practices. The main aim of the study is to They discovered that in order for knowledge sharing to take place there must be technological support.

2.3. SMEs

It is a fact that in South Africa and other developing countries. They are regarded as the heart beat of the economy. Their contribution to the economy is enomours and it can not be ignored. It is believed that they contribute over forty five to the GDP (Gross Domestic Product) and they employ two thirds of the total labour force. Their contribution is not only limited to the developing countries but globally they are recognised. In South Africa, over ninty seven point five percent of businesses are SMEs. In the global level they account to over sixty percent with the highest number of employees working there [11]. However, there is no standard definition of the term SMEs. Every country define it based on its own economic condition [3]. In South Africa, there are three measuring tools that can be used to define a SMEs. They can be defined looking at the value of assets they have in a specific industry, the turnover they have as well and lastly the number of employees they have in a specific industry. However, SMEs are facing a number of challenges such as finance, poor skilled labour, crime, ensuring quality, compliance, limited usage of technology due to limited technological equipment and corruption amongst other challenges [13]. The next figure will illustrate the challenes that are faced by SMEs in a developing economy.

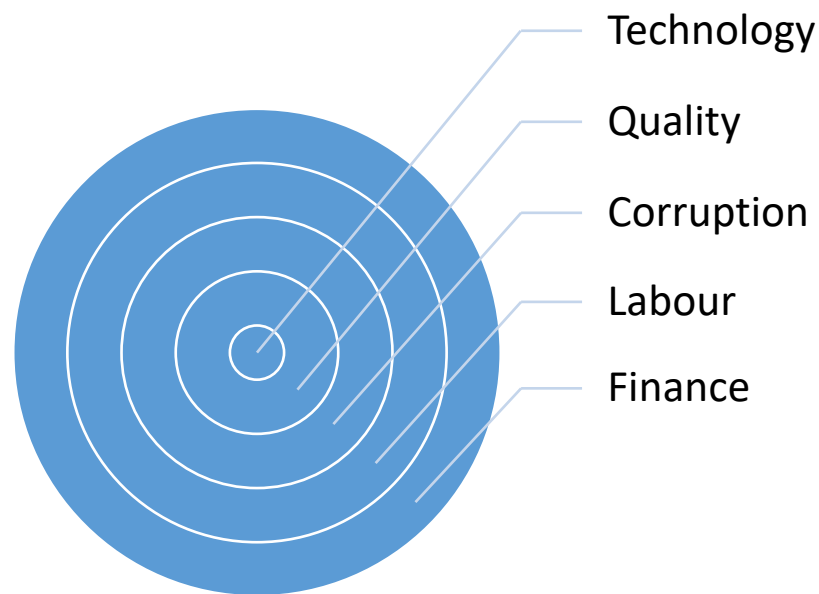


Fig. 1 Challenges faced by SMEs in developing countries

2.4. Fourth Industrial Revolution

After Germany has introduced its strategy of digitalisation, countries wanted to join it and align itself with the fourth industrial revolution. This strategy was introduced in 2011 during the Hannover fair at Germany. The whole idea is to digitalise and automate the industry. This will be achieved using advanced technology such as artificial intelligence, the internet of things (IoT) and big data. Germany is the first country to adopt the industry 4.0 initiative. They called it “*High-Tech Strategy 2020*”. The adoption of this strategy was then followed by other countries such as the United Kingdom, France, Dutch and the United States of America, the United Kingdom and others. This made other countries to give it their strategies for implementing 4IR a name. For example, the United Kingdom name it “*UK CATAPULT – High Value Manufacturing*”, United States of America named it “*Manufacturing USA*”, France named it “*Industrie du Futur*”, lastly Dutch named it “*Smart Industry*”. This is a clear indication that countries are working on following the German’s strategy of using advanced technologies [2].

Since late 17th century, the industry has witnessed three revolutionaries known as industry 1.0, industry 2.0 and industry 3.0. At the current moment, the industry, academics and the government are talking about the adoption of this industry. It is believed that the use of the 4IR will change the way businesses operate especially the manufacturing enterprises. This 4IR has its own advantages such as improving productivity and disadvantages such as many of the white-collar employees will lose jobs [14].

It is of paramount importance to understand that the objective of any organisation is to make profit. However, this will be achieved through satisfying the needs of customers. Furthermore, the organisation will only satisfy the needs of customers by ensuring that all the required resources are in place, services and products are also available to can solve the identified needs and wants of customers [7]. It is important to understand that creating value for customers is essential for the survival and to maximise profit of any organisation. Creating value is not limited to one function that is usually marketing, but is a responsibility of all the management functions in the organisation [2]. The next figure illustrate the fourth industrial revolution elements.

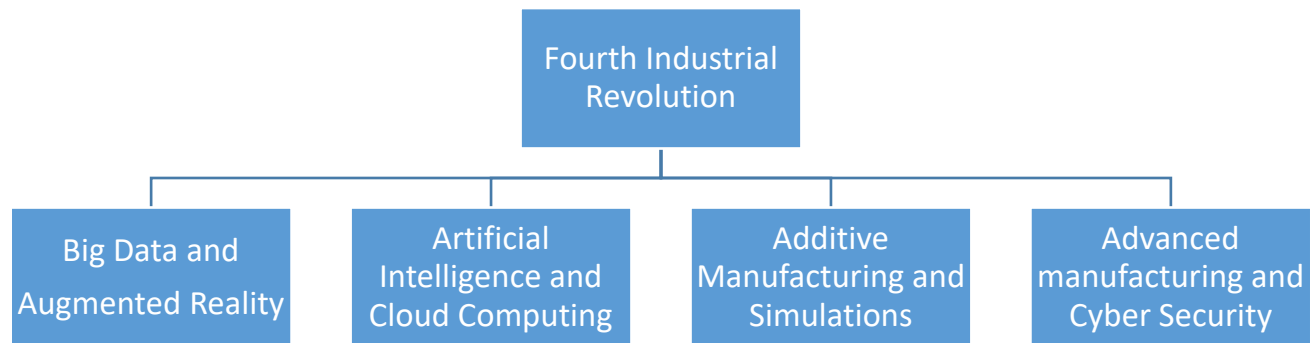


Fig. 2 Fourth industrial revolution

2.5. Knowledge Management

As this section will review knowledge management and this study will look at the inclusion of virtual teams perhaps, it is a good idea to start by defining virtual teams or virtual communities. Virtual teams' or rather virtual communities is defined as society that you find on social networks. In this social network people, interact using various platforms such as message boards, social media sites, chat rooms and other platforms [6].

Knowledge is regarded as a tool for gathering value in the organisation [15]. Knowledge can also help the organisation with decision-making and continuous learning in the enterprise [1]. It is a very crucial resource that organisations should manage and ensure that it is shared with colleagues. As a crucial resource this is, it can be used to improve performance, competitiveness, the profitability and the success of the organisation. It has been alluded that knowledge creation contribute to the innovativeness of the organisation. The question is what is knowledge creation? Knowledge creation can be defined as *"a continuous process of leaning by acquiring a new context, a new view of the world and new knowledge in overcoming the individual boundaries and constraints imposed by existing information parameters."* Employees in organisations can only acquire new knowledge when they share the knowledge they have which can be tacit or elicit with their colleagues. This will help themselves to deal with problems or issues that they would not normally be able to deal with. All this can only be achieved through knowledge sharing. It is important to understand that it is only through knowledge sharing that knowledge creation can be achieved [5].

Knowledge has two types and they are defined as follows: explicit knowledge, which is defined as knowledge that can be stored elsewhere. It can be in servers, in the cloud, drawers, shelves etc. The second knowledge is called tacit which is knowledge that is rooted in human beings [5]. This type of knowledge is difficult to share as most employees are finding it difficult to share it [10].

[3], proposed a framework for sharing knowledge. They allude that for knowledge to take place employees in SMEs must trust each other, the organisation must formalise their operations, appropriate knowledge technology must be in place, another factor they alluded in their framework is empowering leadership, motivation is also important. The last factor in the framework is effective reward system. All the above alluded factors contribute positively to sharing knowledge in the organisation.

Seseni & Mbohwa, (2016), also developed a framework three years after Eze, et al., (2013) proposed their framework. The framework that Seseni and Mbohwa, (2016) proposed is as follows: organisational culture, sufficient time, management support, teamwork, effective communication, employee motivation and trust. The above mentioned factors have a postive contribution to knowledge sharing and management.

Farooq, (2018) also introduced a framework that can be used to facilitate that sharing of knowledge becomes a success. This study was conducted in India. The study discovered that organisational structure, rewards systems, motivation,

interpersonal trust, management support, information and communication technology, knowledge sharing and business performance relationship. The above mentioned factors contribute positively to the success of sharing knowledge in organisations.

These three frameworks have few similarities. The above mentioned frameworks for sharing knowledge alludes that trust, motivation and management support are important. In addition to that, an enterprise need to have employees who are highly skilled with good knowledge of technology and English. However, Farooq, (2018) and Eze et al., (2018) asserts about the significance of information technology when sharing knowledge. This is relevant especially when organisations have virtual teams.

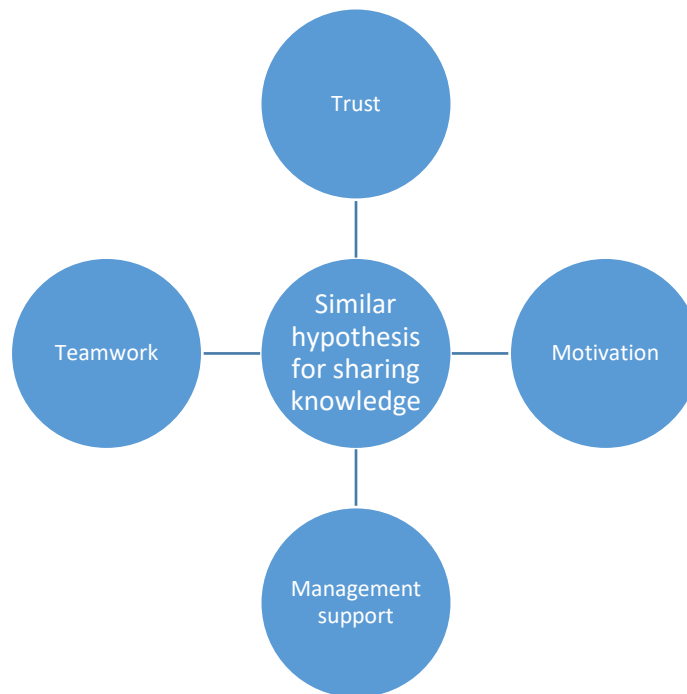


Fig. 3 Similar hypothesis for sharing knowledge

Potential barriers to organisational knowledge sharing

Enterprises are talking about virtual teams. This means that they will have employees who will be out of their enterprises premises. Therefore advanced technology and the use of technology is necessary. Another challenge could be that when dealing with employees who are far from each other lack of trust may contribute employees not sharing the organisational knowledge. This can be caused by poor teamwork with employees who are not in the same place with them. Limited time as well may serve as a barrier to sharing organisational knowledge. Employees must be given enough time to can be able to share their knowledge with their colleagues. In addition to that, employees who have too much work to do find it extremely hard to make time to share with their colleagues because they become obsessed with completing their tasks. Therefore, they may not be able to make time to their knowledge with their colleagues. Another factor that can be a block to sharing knowledge recognition. Employees who are sharing knowledge and those who are learning it also want to be recognised or else they will find it pointless to do so if no one is noticing. It is also important to understand that different time zones of virtual teams can also be serious challenge as they may work in different times. Distance as well contribute because it replaces “*face to face interaction*” and lastly, different cultures of places can also contribute as a barrier as the two virtual teams will be behaving in a different way [15]. The following figure will outline potential barriers to sharing knowledge in entities.



Fig. 4 potential barriers to organisational knowledge sharing

3. Methodology

This study adopted a qualitative approach where three frameworks for successfully sharing knowledge were reviewed. Only the common factors from the frameworks were used to develop a new framework that can be used in the fourth industrial revolutions. The three frameworks were developed in developing countries trying to solve the problem of sharing knowledge in developing countries (South Africa, Malaysia and India).

This study has five hypothesis and they are as follows:

H1: Trust

Trust is “a set of mutual expectations shared by people involved in collaboration and exchange” employees must trust each other so that they can be able to take [1].

Trust has a positive impact on the success of sharing knowledge in the fourth industrial revolution.

H2: Teamwork

Working well together is very important. This will improve productivity, innovation and knowledge sharing [8].

Teamwork plays a significant role in the success of sharing knowledge in the fourth industrial revolution.

H3: Motivation

This is the burning desire to can share knowledge with their colleagues. Two things motivate employees and they are as follows: intrinsic rewards and extrinsic rewards. It is worth noting that if employees are not interested in sharing knowledge there is nothing that the entity can do. When enterprise invest in technological infrastructure but if employees are not interested, there is absolutely nothing the enterprise can do to change that [4].

Motivation has a positive role in the success of sharing knowledge in the fourth industrial revolution.

H4: Management Support and technology

Management must ensure that all the required support is available. They must provide technical support and infrastructure. This means that the enterprise must also have IT specialist in their team. The IT specialists will see to it that systems must be functional at all times. This will ensure that sharing of knowledge be successful [1]. Senior management must encourage their employees to share their knowledge with their colleagues. They must reward those who are learning new knowledge and those who are sharing knowledge [4].

Management support has a positive contribution to sharing knowledge in an organisation.

H5: Sharing knowledge

Sharing of knowledge will be successful provided employees trust each other, provided they work well together, they are motivated to share their knowledge and having support from their management.

H1-H4 contribute to sharing knowledge in an organisation.

4. Discussions and recommendations

As SMEs in developing countries are encountering numerous challenges such as lack of finance which hinders the progress of enterprises as they will not have funds to can employ skilled employees and have technological infrastructure. Therefore, the government must ensure that SMEs get the required funding so that they can be able to get the necessary technology of the 4IR. This will help SMEs to be active participants in the 4IR era.

As employees work together, they must be able to work well together. This can be enabled by trust. If they trust each other, they will be able to share knowledge with one another. They must also be able to work well with each other. Teamwork will play a big role in enabling and instilling trust amongst their people. Management of SMEs must ensure that they instil trust amongst their employees. This will help make them to share knowledge with each other.

Motivated employees will be willing to share their knowledge with their colleagues. If they are motivated to use the technology that the enterprise has so that they interact with their colleagues who are far from them will also play a role in sharing knowledge with their colleagues. However, enterprises must give either the intrinsic rewards or extrinsic rewards. This will motivate them to share their knowledge. Moreover, they must be trained on how to use the advanced technologies that may be used in the enterprise.

5. Implications of the study

This study looked at different frameworks that have been used in three different countries. All of the countries that have been used are developing and they share similar challenges. From the literature gathered this study developed one framework. The framework that is formulated looked at the following: Trust, Teamwork, Motivation, Management Support and Sharing knowledge. The next figure will depict the proposed framework.

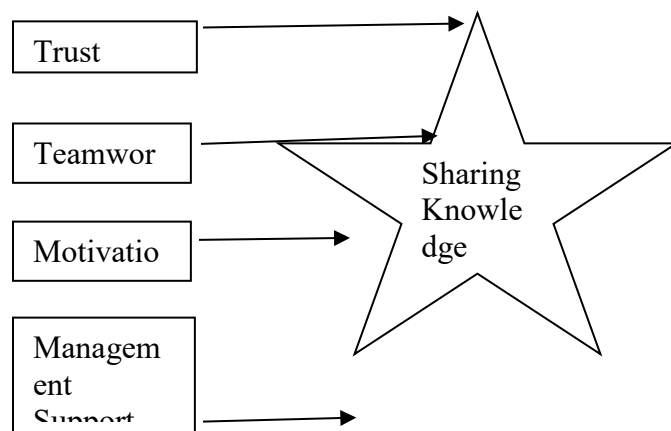


Fig. 5 sharing knowledge in the 4IR era

However, other elements have been alluded in this study are as are the blocks that enterprises should be aware of. When enterprises know potential blocks to sharing knowledge, they must try to avoid the identified blocks. After avoiding potential blocks of sharing knowledge, enterprises must work on the model for sharing knowledge. Ensuring that employees trust each other, they work well with each other, they are motivated to share their knowledge, they get the necessary support they deserve from their management and lastly, they must have the required technology so that they may have the necessary technology and be able to take part in sharing knowledge and learning.

6. Conclusions

Knowledge sharing is crucial because it helps improve the innovativeness, competitiveness and profitability of the entity. SMEs play a pivotal role in the growth of the economy of the country. However, they encounter numerous challenges that need to be addressed urgently so that the above mentioned SMEs can be able to reach their maximum potential. Moreover, as we are in the infancy phase of the fourth industrial revolution that is driven by Big Data and Artificial Intelligence. As these latest advanced technologies will change the way things are done, SMEs must also find a way to manage organisational knowledge in the fourth industrial revolution. Barriers for sharing organisational knowledge are explored in this study. It is alluded in this research that in order for organisational knowledge sharing to take place there must be trust between employees, employees must be motivated to share their knowledge, management must also support its employees with regards to sharing organisational knowledge, employees must work with each other, information technology must also be available. All the above will contribute in ensuring that knowledge is shared successfully in the organisation in the fourth industrial era. This study is limited to SMEs in developing nations (South Africa, Malaysia and India). Moreover, this study did not look at the technologies that can be used when successfully trying to share organisational knowledge. Further research must be done on the exact technologies that can be used to when sharing organisational knowledge in SMEs.

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Biographies

Mr. Lawrence Seseni is a PhD Candidate in Operations Management at the University of Johannesburg. He is currently working at the same University at the faculty/college of Business and Economics where he serves as a Contract Lecturer in the department of Business Management and a contract lecturer in the same institution but at the Centre of Small Business Development (CSBD). His masters study was on Quality Management in Furniture manufacturing SMEs (Small Medium Enterprises). He serves in different boards as a board of director, one of the boards he serves is IBASA YC (Institution of Business Advisers South Africa Youth Chapter). He is now serving as a board of director with a portfolio of co-secretary of the IBASA YC (Institution of Business Advisers South Africa Youth Charter). He is also serving as a Co-Faculty Adviser in the student organization called ENACTU University of Johannesburg. He served at Enactus University of Johannesburg since 2012 holding different portfolios. His interest in research is Knowledge Management in SMEs, Service and Product Quality within SMMEs. In the year 2017 he became a member of the University of Johannesburg IEOM student chapter where he currently serves as a Director of Finance.

Charles Mbohwa Professor Charles Mbohwa is the Acting Executive Dean at University of Johannesburg's (UJ) Faculty of Engineering and the Built Environment (FEBE). As an established researcher and professor in the field of sustainability engineering and energy, his specializations include sustainable engineering, energy systems, life cycle assessment and bio-energy/fuel feasibility and sustainability with general research interests in renewable energies and sustainability issues. Professor Mbohwa has presented at numerous conferences and published more than 150 papers in peer-reviewed journals and conferences, 6 book chapters and one book. Upon graduating with his B.Sc. Honors in Mechanical Engineering from the University of Zimbabwe in 1986, he was employed as a mechanical engineer by the National Railways of Zimbabwe. He holds a Masters in Operations Management and Manufacturing Systems from University of Nottingham and completed his doctoral studies at Tokyo Metropolitan Institute of Technology in Japan. Prof Mbohwa was a Fulbright Scholar visiting the Supply Chain and Logistics Institute at the School of Industrial and Systems Engineering, Georgia Institute of Technology is a fellow of the Zimbabwean Institution of Engineers and is a registered mechanical engineer with the Engineering Council of Zimbabwe. He has been a collaborator to the United Nations Environment Programme, and Visiting Exchange Professor at Universidade Tecnológica Federal do Paraná. He has also visited many countries on research and training engagements including the United Kingdom, Japan, German, France, the USA, Brazil, Sweden, Ghana, Nigeria, Kenya, Tanzania, Malawi, Mauritius, Austria, the Netherlands, Uganda, Namibia and Australia.