THE IMPACT OF STRATEGIC KNOWLEDGE MANAGEMENT AND THE INTERNET OF THINGS (IOT) ON CHINESE INNOVATION AND MANUFACTURING FIRM'S PERFORMANCE

LIU HUIYAN[1], ABHIJIT GHOSH[2]

[1]Research Scholar, Lincoln University College, Petaling Jaya, Malaysia.
[2]Lincoln University College, Petaling Jaya, Malaysia.

ABSTRACT

New disruptive technologies are altering the way in which organisations manage their knowledge in the context of the Internet of Things (IoT). This calls for a rethinking of the conventional knowledge management system and the implementation of a more open approach to facilitate the free exchange of ideas. This tendency likely beneficial to the growth of the key in-house knowledge management skills that are being developed by the organisation. The investigation of this environment focusses on four interconnected ideas: knowledge management, open innovation, the aptitude for knowledge management, and creative brilliance. This objective is accomplished by using the method of structural equation modelling to the information gathered from 685 Chinese businesses. The findings demonstrate that putting in place a knowledge management system raises an organization's capacity for innovation by developing its internal knowledge-management resources. This, in turn, makes it possible for greater opportunities for teamwork and access to informational resources that were not previously utilised. The results of the study are used to draw important aca'emic and management implications, and they are also used to identify prospective future avenues for research.

Keywords: Internet of things, Strategic knowledge management, Manufacturing firm, Chinese innovation, Firm performance.

1. INTRODUCTION

The Internet of Things (IoT) paradigm is a novel paradigm in the current context of modern information and communication technologies (ICTs). The Internet of Things, a collection of disruptive digital technologies, affects both individuals and businesses. Disruptive technologies are increasingly being incorporated into business processes in order to increase efficiency through the flow of knowledge and the collection of data and information. It is imperative for companies to develop appropriate and relevant knowledge management processes and capabilities in order to maintain their competitive advantage in this global economy. More and more academic and practical research has been done on information management and how to get the most from it at work. Knowledge management refers to the process of identifying and utilizing a group's collective knowledge in order to enhance competitiveness, innovation, and responsiveness to environmental changes. Information technology-based knowledge management systems have received relatively little research attention in terms of their development, implementation, and overall success rates (IT) (Kim and Kim, 2016). This represents a significant gap in scientific business knowledge because many organizations are implementing knowledge management systems to make it easier to create, share, and store knowledge. In light of the movement's new and increasing momentum, creating digital ecosystems using ICT tools, experimental technology platforms, e-service applications, and other infrastructures of the information society can give companies a competitive edge by facilitating the collection and exchange of data and information. This phenomenon is reshaping the way innovation is carried out in the first place. Despite significant progress in several areas of knowledge management, the results of programmes to

improve knowledge management have been inconsistent and unclear. Then why aren't there more studies on how and when knowledge management initiatives can improve productivity and outcomes? This has resulted in a greater focus on the link between knowledge management and business performance. Research in knowledge management (KM) is also common to focus solely on internal knowledge, ignoring the importance of integrating both internal and external knowledge into a holistic approach. Internal Knowledge Management Capacity (KMC) is becoming increasingly important to companies in today's dynamic environment as a means of effectively managing knowledge flows both within the Organization and to and from the outside world. As the name suggests, KMC is all about a company's ability to explore and retain information not only within the organisation in which it is employed, but also across all other organisations. As a result, firms tend to form alliances with other stakeholders in their ecosystem, resulting in a dynamic exchange of knowledge. As a direct result of the IoT phenomenon, firms can and should implement and maintain KMS that utilise cutting-edge ICTs and external knowledge sources, resulting in improved innovative performance (defined as the ability to introduce new products/services and processes or open up new markets (Santoro, 2018).

The top authorities and economic planners in China have issued mandates for the rise of the Internet of Things (IoT), which has resulted in the announcement of a variety of government directives that overlap with one another. These mandates have caused the announcement of a variety of government directives that overlap with one another. Beijing has placed a high importance on the development of the Internet of Things (IoT), and this is obvious in the efforts made by the Chinese government to coordinate regulations and offer financial aid for the IoT sector. Certain government accounts provide the funding for research and development (R&D), and a variety of state laws encourage government agencies to coordinate policies in order to facilitate the rapid and broad adoption of the Internet of Things (IoT) (Yung-Lung, 2014).

2. PROBLEM STTEMENT

"Knowledge management (KM) and organizational performance are believed to be essential of the success in business. The different results in literatures which declare KM affects organizational performance positively. But there are still some confusing relations between KM and organizational learning (OL)".

The idea that KM affects performance of the organization through OL is supported by empirical data. This study lends more credence to the idea that OL mediates the relationship among KM and organisational achievement. OL's function as a mediator is, thus, an important new insight into this topic (Liao & Wu, 2009).

3. BACKGROUND OF THE STUDY

It may be difficult to define the Internet of Things (IoT) in a single line owing to the rapid pace at which it is developing. This is primarily because the IoT has the potential to be used in such a broad variety of contexts. In an attempt to give a high-level definition of the idea, a number of well-known organizations, such as the International Telecommunications Union (ITU), have

collaborated on an effort to provide a description of the Internet of Things (IoT) and the components that make up the IoT. The National Institute of Standards and Technology in the United States has not yet included a term for the Internet of Things in the official IT vocabulary that is maintained up to date by the organization (NIST). In spite of the fact that there is not a definition of the internet of things that is agreed upon by everyone, a number of distinct interpretations of it have evolved. According to a new textbook written and published by Cisco, the Internet of Things (IoT) is defined as the practice of utilizing "endpoints or objects," "connectivity," and "people and processes," in addition to "interactions (data and choices) across these entities to create smart systems and services that produce corporate value." The Internet of Things has been given the definition of a "global infrastructure for the information society," which enables advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies (ICT). This definition was given to the Internet of Things by international standardization bodies such as the International Telecommunication Union (ITU) (Zhang, 2015).

The Internet of Things continues to defy straightforward categorization for a number of reasons, one of which is the widespread use of the fundamental technologies that underpin it in a variety of industries, each of which does so in a specific way. This widespread use of these technologies is one of the reasons why. Although the sensors in a smart car and those in a pacemaker that is linked to a network are different in size and the range of responses that they offer, both kinds of devices monitor the same sorts of physical data, such as speed and acceleration. The particular form that a future Internet of Things sensor may take is often unpredictable, and there is a large variety of conceivable uses for the technology, which may make it difficult to expand the technology (Links, 2017).

4. LITERATURE REVIEW

The academic conversation on how to effectively manage innovation in a future when the Internet of Things is the dominant technology has only just started. Discussions on the Internet of Things (IoT) are now taking place in three key groups. These communities include the academic community, the business sector, and the governmental sector. For example, governments all over the world have launched a number of different initiatives, such as those pertaining to the standardization of procedures (in the United States, this initiative is known as the Industrial Internet Consortium (IIC). The Internet of Things (IoT) has been researched by a variety of academic departments utilizing the backdrop of the digital age, which has led to a wide range of perspectives and findings being uncovered. When it comes to the conception and implementation of the Internet of Things, there is a substantial gap in the levels of success shown by the different sectors in terms of this technology. To provide just one example, the business of selling consumer products is light years ahead of the sector of providing financial services. In addition, because of the ambiguity that surrounds the definitions, layers, tactics, and implications of the internet of things, it is still difficult to adequately portray the degree of disagreement that is now going place (Nicolas, 2011). In order to set the stage for the current conversation, they are going to begin by doing a literature review that draws from a variety of academic disciplines and covers topics such as digitalization, the Internet of Things (IoT), and industrial IoT. They provide the conclusions of studies that were generated by both the

business sector and the government in order to demonstrate that they have taken their points of view into consideration. In this paper, they show how the existing corpus of literature has become wider over the last ten years in terms of the diversity of topics it explores and the ways in which it classifies those topics. In order to organize and standardize both the review process as well as the findings of it, the study draws on concepts from both the philosophy of science as well as the area of systems thinking. In order to wrap things up, now they organize the results of the debate and evaluation into the following four categories: digitalization, the internet of things (IoT), the industrial internet of things (IIoT), and electronic collaboration. The Internet of Things refers to a network of interconnected physical devices that are able to communicate with one another and share data using a variety of network connections, including wireless, optical, and coaxial cable. The application of information and communications technology (ICT) as well as real-time analytic hubs to digital technologies that are currently in use paves the way for a broad variety of potential outcomes. Since it is an open system that links a variety of devices to the internet, they may consider the Internet of Objects to be a global network of linked things (Ouaddah, 2016).

Knowledge management is different in different contexts. To some degree, a great many organizations have tried to formalize their knowledge. Anecdotal evidence suggests that many of these initiatives have failed. Because it is both unrealistic and undesirable to have "a universal concept of knowledge management," Zhu makes the following point: Despite this, existing literature on knowledge management (KM) success stories tends to focus on large Western corporations rather than non-Western contexts. Davison and Martinson argue that "cultural and institutional differences" are important. They can't argue with the facts here. Knowledge management is different in different contexts. A variety of organizations have attempted to codify their knowledge in various ways. The anecdotal evidence suggests that the majority of these endeavors have not been successful. "A universal concept of knowledge management...is unrealistic, counterproductive, and undesirable," writes Zhu in his book. However, existing literature tends to focus on Western corporations rather than non-Western contexts when discussing KM successes. According to Davison and Martinsons, "cultural and institutional differences" "matter!" Failure Factors in Knowledge Management in Two Professional Service Firms Gamma Consultancy Services are listed in this category. Partnerships with Theta Partners the KM system is cumbersome to learn and use. ' A lapse in technical assistance occurred following the expiration of the initial contract period of time. There is a lack of communication between the KM system components. Knowledge Management does not have a clear vision (KM). The KMS is suffering from a lack of top-level support and commitment. According to Martinsons and colleagues in the International Journal of Information Management, the causes of KM successes and failures are not universally applicable to all organizations (IJIM). In China, one of the first things they are trying to figure out is why and how KMS projects go wrong. Informal and unstructured knowledge exchange is preferred by them. CAR projects have helped the researcher shed light on Chinese knowledge management. Despite the fact that the investigation has yielded important findings and insights, it is not without its drawbacks. It's risky to extrapolate the findings beyond the confines of China's small PSFs. They can be confirmed or refuted by different organizational and social cultures (Piller, 2014). According to the researcher, it is necessary to conduct more in-depth studies across a wider range of industries and collect more data. Additional theorizing and new study concepts are needed in order to build on this theory's foundation in China and

other transition economies. It may be difficult for an organization's leaders to accept a more normative approach to organizational change, which provides an opportunity for clean-cut change if they want to preserve a culture that is known for its lack of surprises and discomfort. This strategy has the potential to jolt a company out of its comfortable but ineffective slumber. China has a long way to go when it comes to mastering the art of Knowledge Management. Small and large businesses should be studied using a variety of methods and theoretical perspectives. These studies should also consider institutional factors in order to advance and expand the understanding of knowledge management and sharing (Mishra, 2016).

5. METHODOLOGY

The purpose of this study is to offer a background for the empirical analysis and hypothesis testing of the theoretical relational path that was chosen based on the existing literature. The conceptual models that have been offered make it possible for this to occur. Quantifying the facts is one of the goals that the conceptual framework seeks to accomplish. In this particular investigation, the majority of the approaches and methodologies that used were quantitative. The research was a detailed cross-sectional investigation that took place over the course of three months, from September to December of 2022. In this study, used a cross-sectional design, which allowed us to gather data at a particular moment in time in a straightforward and economical manner. The researcher had to use a quantitative strategy to limit the use of resources. The total sample size of 700 included people from manufacturing. The study was mostly focused on the industrial sector in China. According to the information that was gathered from different parts of the world, it was anticipated that the total working population would reach three billion. Rao soft was used to do the determination, and the results showed that the sample size was. The samples were from a selection that was completely at random. Over 815 questionnaires were sent, and only 795 were brought back for further inspection and 685 of which were complete. For the purpose of carrying out the interviews, a questionnaire consisting only of yes/no questions was used. It includes twenty items with five response categories ranging from 1= Strongly disagree 5= Agree. The researcher might ask the same set of questions to all of the participants if they are using a structured data collecting instrument. Then, the researcher might have the participants choose from a limited set of prepared answer possibilities. This is done so that the researcher can gather information on the social and demographic aspects of the workforce. It took around 25 minutes to fill out a single form, and all of the information was gathered in less than a month. In order to be successful, organisations must always keep an eye on their surroundings and have a flexible mindset. One way to determine whether or not a prior estimate that was plausible of the costs of the inputs that were required to manufacture the product is now unrealistic, for example, is to keep an eye on the market. This is one strategy that may be used. In order to arrive at a more accurate estimate of the input costs, it would be necessary to do more scanning, forecasting, and analysis.

6. THEORETICAL FRAMEWORK

7.   RESULTS

7.1 FACTOR ANALYSIS

A method for reducing the number of variables to be analysed, Principal Components Analysis (PCA) finds the subset of variables (components) that best explains the data. Let's pretend the survey the researcher uses to gauge participants' resolve contains 35 items. Researchers hope to shorten the survey's length by cutting down on the number of questions. Using principal component analysis (PCA) to find and eliminate duplicate items is a good way to streamline the survey.

Table 1. KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.945
Bartlett's Test of Sphericity	Approx. Chi-Square	5334.715
	df	190
	Sig.	.000

In this regard, Kaiser recommended that the KMO (Kaiser-Meyer-Olkin) measure of sampling adequacy coefficient value should be greater than 0.5 as a bare minimum for performing factor analysis. The KMO value of the data used for this study is .945. Furthermore, Bartlett's test of Sphericity derived the significance level as 0.00.

7.2 TEST FOR HYPOTHESIS

A macroenvironmental study is one that looks at the environment from a variety of different perspectives, including macroeconomics, society, politics, law, technology, and international relations. A thorough investigation of the external environment that the organisation operates in may reveal opportunities and threats that were not previously expected. Managers who think strategically have a responsibility to keep an eye on the bigger picture and anticipate developments in both their industry and the broader world.

H01: There is no significant relationship between scanning the environment and strategic knowledge management.

H1: There is a significant relationship between scanning the environment and strategic knowledge management.

Table 2. ANOVA

ANOVA					
Sum					
	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	51832.650	105	6479.081	152.575	.000
Within Groups	3864.310	579	42.465		
Total	55696.960	684			

In this study, the result is significant. The value of F is 152.575, which reaches significance with a p-value of .000 (which is less than the .05 alpha levels). This means the "H1: There is a significant relationship between scanning the environment and strategic knowledge management" is accepted and the null hypothesis is rejected.

8. CONCLUSION

It has been shown that knowledge management, often known as KM, is an efficient strategy that may boost both creativity and productivity. In addition, improved financial outcomes may be achieved by the combination of codification and customization. It is becoming more obvious that KM and KM strategy have a favourable influence on the creativity and performance of corporations. Companies have come to realise that a knowledge management strategy that is well defined has the ability to boost revenue, efficiency, creativity, and talent. Because of these advantages, the link's capacity to nurture novel patterns of performance is improved. A significant amount of effort has been invested by researchers in the process of learning about and trying a variety of organisational solutions for supporting creative thinking.

9. LIMITATIONS

To focus only on quantitative data might cause researchers to miss out on more general trends and correlations than what can be uncovered using qualitative methods. A possible difficulty in showing a pattern in qualitative research data is that it depends so much on the participants' personal experiences and perceptions. In most cases, individuals recollect past occurrences in the way that they would want to remember them. And that's why, even if a particular memory caused us distress at the time, it's likely to be seen favourably upon reflection. The optimistic tendency of humans presents a challenge for researchers trying to prove the veracity of their results.

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