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Article

Systematic Analysis of the Factors That Impact upon the Mindset of Knowledge Sharing Behaviour (KSB) for Individuals within Academia

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Abstract: The aim of this study is to provide an examination of the factors that have a bearing on KSB, based upon attitudes amongst academics in developing countries, using a particular focus upon academics within the University of Baghdad. With the research study, structural equation modelling was undertaken by using a questionnaire survey for examination of attitudes to microfoundations with regard to KSB amongst a total of 326 academics based at the University of Baghdad. With regard to KSB, it was found that three of the hypothesised factors (anticipation of extrinsic rewards, anticipation of reciprocal relationships and perception of reciprocal benefits) were significantly and positively related. No significant relationship, however, was found to exist between KSB and interpersonal interactions. Based upon the results, a refined, valid model succeeds in exhibiting good explanatory power for the prediction of the intentions for the KSB of academics. Furthermore, it was suggested by the results that academics who were less educated had a greater willingness for knowledge sharing than those who were more highly educated. Based upon the unprecedented data, the paper makes a contribution to growing KSB-theory-related research, particularly with respect to the planned model of behaviour, and puts forward empirical evidence in support of the relationship between attitude and the KSB of academics.

Keywords: knowledge management; knowledge sharing; knowledge sharing behaviour; attitude towards knowledge sharing; higher education

1. Introduction

The world of today is reshaped continually by new, innovative thinking and approaches (Aizpurua et al. 2011; Singh et al. 2021). As a knowledge-oriented society continues to emerge, an essential developmental element is considered to be knowledge itself (Prieto and Easterby-Smith 2006; Carvalho 2021). It is widely believed, in fact, that knowledge has greater value for organisations than material resources (Akhavan et al. 2006; Nguyen et al. 2021). Indeed, knowledge is able to increase the effectiveness of organisations, reduce their risks and costs and lead to enhanced creativity (Rašula et al. 2012). Knowledge needs to be managed appropriately by organisations so that there can be enhanced performance and greater prospects of survival (Cheng et al. 2009; Ahmed and Shepherd 2010; Goh and Sandhu 2013; Skaik and Othman 2015; Al-Kurdi et al. 2018). The "knowledge management" term incorporates people, processes and technologies (the microfoundations) that are involved with knowledge creation, knowledge sharing and knowledge use (Cheng et al. 2009; Foss et al. 2010; Andreeva and Kianto 2011; Disterheft et al. 2012; Goh and Sandhu 2013; Skaik and Othman 2015; Al-Kurdi et al. 2018).

The development of a culture of knowledge sharing has importance for the application of initiatives for knowledge management (Uriarte 2008; Zhou and Li 2012; Abdelrahman et al. 2016). There is an increase in microfoundation-related knowledge in organisations

when there is knowledge sharing ([Felin and Foss 2005](); [Foss et al. 2010](); [Hislop 2013]()). As universities seek to ensure that they have high standards of research quality and education, it is increasingly important that they manage their knowledge assets well, so they keep up with a knowledge economy that changes so rapidly these days ([Maccoby 2009]()). [Bollinger and Smith (2001)]() defined knowledge management as the activities that are employed when usable ideas are generated, communicated and exploited among organisational members for both their personal benefit and that of the organisation. Further, sharing culture is essential for the stimulation and enhancement of knowledge creation and knowledge sharing; however, it is the case that, in universities, a pressurised research culture may result in working patterns that are very individualistic. Within the field of knowledge management, a key area is the sharing of knowledge ([Halawi et al. 2008](); [Muhammed and Zaim 2020]()). Knowledge sharing has great importance for organisations, and it has been shown by researchers that knowledge sharing may be enabled through more appropriate forms of knowledge sharing behaviour (KSB) ([Peng et al. 2015](); [Balau and Utz 2016]()). The causal links that lie between knowledge sharing, behaviour and the attitudes of individuals have, however, not been realised fully, especially within the contexts of higher education institutions based within developing countries; as such, several researchers have stressed that there is a need for more studies in that field ([Xu et al. 2010](); [Jahani et al. 2011](); [Ramakrishnan and Yasin 2012](); [Nawaz and Gomes 2014](); [Javaid et al. 2020]()).

This research identified that there was a lack of empirical studies investigating relationships that could exist between microfoundational attitude, knowledge sharing and behaviour. No existing study has investigated those types of relationship in a higher education context within Iraq, especially within a University of Baghdad setting. Additionally, a strength of this research is that is puts forward new evidence from a relatively fresh cultural context, so that new perspectives may be brought to further existing theories. Previous similar studies have mainly been conducted within other developed countries and, as such, the research permits comparison testing for the validity of the findings; this presents a significant advantage. If, as a case study, the University of Baghdad is taken as an example of an institution of higher education within a developing country, i.e., Iraq, positive results were indicated by the key findings, so that there is generalisability of the study findings to similar universities within other developing countries.

This research employed a conceptual framework based upon the attitudes and behaviours of academics that could be further developed so that there could be promotion of attitudes that are more positive with regard to knowledge sharing. The authors believe there has not been theoretical and empirical testing of such a type of theoretical framework previously. Indeed, previous research regarding academics within Iraq has had a focus upon knowledge sharing, leadership and innovation and not an emphasis upon knowledge sharing behaviour. This research, then, has the aim of establishing an integrative, theoretical framework that incorporates the factors that have a bearing on attitudes amongst academics and behaviours that they have with regard to knowledge sharing. As such, this research study has the aim of examining the impact noted from the factors applied, i.e., anticipation of extrinsic rewards, anticipation of reciprocal relationships and perceptions of reciprocal benefits, in order to provide an assessment of individual knowledge sharing behaviour through use of the method of a questionnaire survey of a total of 326 academics based within the University of Baghdad.

The goal of this paper is to investigate academics' knowledge sharing behaviour intentions and its determinants in higher education institutions (HEIs) in developing countries, with a specific focus on the University of Baghdad in Iraq. In order to achieve the main goal of this study, the following research questions have been set:

This research seeks to investigate academics' knowledge sharing behaviour intentions and its determinants within higher education institutions (HEIs) in developing countries, with a specific focus on the University of Baghdad in Iraq. The study aims to answer the following research questions: How does the attitude toward knowledge sharing impact the actual knowledge sharing behaviour among academics at the University of Baghdad?

What influence does the subjective norm have on the knowledge sharing behaviour of academics in the same institution? To what extent does perceived behavioural control shape the knowledge sharing behaviour of academics at the University of Baghdad? Additionally, the research aims to develop and test a conceptual framework that captures the critical factors that affect the knowledge sharing behaviour of academics. Lastly, the study aims to propose practical recommendations that can be implemented to foster a culture of knowledge sharing among academics at the University of Baghdad.

The findings revealed, following testing of hypotheses, that there were significant positive relationships to knowledge sharing behaviour in existence, in statistical terms between the independent and dependent variables. However, the findings also showed that within the academic profession there were significant differences between different education levels of the participants and their willingness to engage in knowledge sharing. As such, participants that had an education level that was high seemed to have a lower likeliness to share their knowledge than those academics that had levels of education that were lower. Similarly, academics that had lower education levels were more likely to view recent knowledge sharing projects as having been successful when they were compared with academics who had higher education levels. In keeping with the argument presented herein by the authors, the sections that follow will be laid out thus: Section 2—Higher education institutions and theoretical background to the study; Section 3—Theoretical study framework and hypotheses development; Section 4—Methods; Section 5—The findings; Section 6—Discussion and finally Section 7—Conclusion and recommendations.

2. Theoretical Background and Higher Education Institutions

A competitive advantage can be gained by organisations through encouragement and promotion of the knowledge sharing of its employees (Liebowitz and Wilcow 1997). The study of knowledge sharing, however, has been predominantly in regard to organisations within businesses that have an orientation that is obviously towards the achievement of profit. However, critical links also exist within universities for the preservation of ideas and knowledge. Within academia, the key processes are teaching, research and the publication of articles and books (Hussein and Nassuora 2011; Al-Kurdi et al. 2020). Therefore, it may be considered that knowledge sharing has even more importance within institutions such as universities that are founded upon knowledge; as such, the topic of knowledge sharing in institutions of higher education is worth studying further.

An institution of education can be considered as a platform from which academics communicate their ideas and insights, and universities are able to add value to an environment for the processing of information (Mphidi and Snyman 2004; Martin and Marion 2005). Within universities, the aim is for knowledge to be shared freely between academics. Allee (1997, p. 71) stated by that "knowledge is power, so share it in order for it to multiply". Nowadays, however, knowledge is not always shared freely within universities. Within organisations, the assets that are most significant are the microfoundational intellectual capital and knowledge, with these resources helping to achieve competitiveness (Serenko et al. 2010). Steyn (2004) stressed the importance that knowledge management has within institutions of higher education; Steyn also stressed that there needed to be a focus upon structures, people and technology for there to be fuller exploitation of knowledge power.

As organisations that are knowledge-based, institutions of higher education have a need for the promotion of knowledge sharing amongst employees to optimise the use of intellectual capital and to sustain competitiveness within the global marketplace (Swart and Kinnie 2003). As business organisations, academic institutions need to respond to external demands that are placed upon them and to seek the expansion of the capabilities of their staff (Goetsch and Davis 2014). The experience gained by academics could be considered as the primary competitive resource and a key knowledge element within institutions of higher education (Maponya 2005).

Through working along with other organisations to solve problems, institutions of higher education can contribute through their suitable transfer of knowledge (Fullwood

and Rowley 2017). The common argument is that institutions of higher education are able to change the world by their informing of public policy, with their training and with their research finding answers to some of the difficult challenges in life (Galang 2010). Within the environment of an academic institution that is knowledge intensive, the sharing of knowledge is an activity that is a daily matter, with the organisation members forming a basis for the learning and research that comes forward (Fullwood and Rowley 2017). The behaviour regarding the sharing of knowledge in institutions of higher education usually impacts upon the behaviours, attitudes and beliefs of academics, since the culture for knowledge sharing may influence academics considerably.

The concept of knowledge sharing has been examined by several scholars, including Castaneda and Cuellar (2021), who focus on the evolution of knowledge sharing in business education and its impact on virtual environments. Dospinescu and Dospinescu (2020) explore students' perceptions of e-learning platforms, whereas Sulistiawan et al. (2022) investigate knowledge hiding in service sector firms and its consequences. Additionally, Liesa-Orús et al. (2020) investigate professors' perceptions of the contribution of ICTs to skill development in students. Although these papers address different aspects, they all revolve around education, knowledge transfer and the role of technology in learning.

These authors have provided valuable insights into education, knowledge sharing and technology. The COVID-19 pandemic has amplified the importance of knowledge sharing in virtual environments within business education. Students' perceptions of e-learning platforms vary, even within the same university, highlighting the significance of individual perspectives. Knowledge hiding is prevalent in service sector firms, driven by factors such as distrust and knowledge complexity. Surprisingly, it can have a positive impact on short-term task performance. University professors recognize the potential of ICTs in developing students' skills and acknowledge their positive impact on learning. Overall, these conclusions contribute to our understanding of the evolving educational landscape and the role of technology in facilitating learning and skill development. The papers collectively shed light on the importance of adapting to virtual environments, considering individual perspectives, addressing knowledge hiding behaviour and harnessing the potential of ICTs to enhance education.

In the literature that serves as the background to this particular research study, it may be noted that the factors of the readiness of academic's impact strongly upon the behaviours, attitudes and belief of particular individuals and the responses they have towards the sharing of knowledge (Armenakis et al. 1993; Bernerth 2004; Fullwood and Rowley 2017; Akosile and Olatokun 2020). The factors in question could relate also to the psychological and financial predictors of individuals (Alvi and Ahmed 1987; Ma and Chan 2014). Furthermore, employees can develop attitudes and behaviours that are positive if they appreciate the need for particular action(s).

Openness concepts, including open access, data sharing, open software and knowledge sharing, have gained significant traction in academic knowledge exchange in recent years (Allahar 2017; Colao et al. 2020). These ideas are increasingly embraced within the academic community due to their potential to foster collaboration, accelerate scientific discovery, optimise research efficacy, and enhance knowledge sharing practices (Vicente-Saez and Martinez-Fuentes 2018; Besançon et al. 2021). Open access initiatives, for instance, enable unrestricted access to scholarly publications, breaking down barriers to knowledge dissemination and facilitating wider readership and citation impact, thereby promoting knowledge sharing across disciplines (Björk and Solomon 2012).

Despite the numerous benefits, challenges and considerations persist in the implementation of openness concepts and knowledge sharing. Ensuring privacy and security when sharing sensitive research data is a crucial concern, particularly in the context of knowledge sharing (Koo et al. 2020). Striking a balance between open access and protecting intellectual property rights and personal information necessitates robust data management practices and ethical guidelines that foster responsible knowledge sharing (Hofmann 2022). Additionally, sustainable financing models for open access publications need to be developed

to ensure the viability and long-term availability of openly accessible research outputs, facilitating continuous knowledge sharing (Björk 2021).

Addressing these issues and further advancing openness concepts and knowledge sharing in academia requires collaborative efforts from researchers, institutions and policymakers (Tzanova 2020). By fostering a culture of openness, embracing technological advancements and implementing robust governance frameworks, the academic community can navigate the challenges and fully realize the transformative potential of open access, data sharing, open software and knowledge sharing in advancing scientific knowledge, interdisciplinary collaboration and innovation.

3. Theoretical Framework and Hypotheses Development

There are lots of theoretical models and arguments in support of the behaviour and attitude of individuals towards the sharing of knowledge. The "theory of planned behaviour" (TPB) model is one such theoretical model; based upon Ajzen (1991), the model was adopted for utilisation within this study. That model is, perhaps, a most influential and popular social–psychological type for helping to provide predictions and explanation of human behaviour in specific contexts (Ajzen 2001). The TPB model is a further expansion from the previous "theory of reasoned action" (TRA) put forward within the research offered by Ajzen and Fishbein (1980). Since it did not appear that behaviour was completely voluntary and under control, there was the introduction of a new determinant of PBC (perceived behavioural control). This expansion resulted in the TPB being formulated and a postulation that the primary determinants for the behavioural action of an individual are intention and perceived behavioural control.

The intention within an individual can be considered indicative of the readiness that they have to engage with a particular type of behaviour and, as such, can be considered a function of ATT (attitude towards behaviour), SN (subjective norm) and the perceived behavioural control; all those determinants are given a weighting of significance for the particular population and behaviour that are under consideration. Attitude towards a particular behaviour is founded upon behavioural beliefs that are concerned with expected consequences of a particular behaviour and evaluation for those consequences, whether favourable or unfavourable. The SN is founded upon normative beliefs that are concerned with the perceived social pressure that hails from a referent group that are influential with regard to non-performance or performance of the considered behaviour. The SN combined with motivation for compliance within referent group expectations are determined by normative beliefs. Perceived behavioural control is based upon control beliefs regarding the perceived presence or absence of factors that could facilitate or impede performance in relation to the behaviour under consideration. Control beliefs serve to determine the perceived behavioural control along with the perceived power for each of the factors. There is boosting of intention through perceived behavioural control since individuals do not have a tendency towards motivation regarding the performance of tasks in which they have a tendency towards failing. Furthermore, the expectation is that perceived behavioural control will influence actual behaviour, especially when the perceived behaviour control and the actual control of an individual agree. The greater the belief that a person has that they are in possession of resources and opportunities, then the fewer the impediments anticipated; therefore, they would have greater level of perceived control with regard to their behaviour.

A theory for reasoned action was proposed by Ajzen and Fishbein (1980), and they proved successfully that attitude factors are significant determinants with regard to behavioural intentions. Chang (1998) shared similar sentiments in strongly asserting that behavioural intentions were significantly influenced by attitude(s) with regard to moral behaviour. Attitudes towards knowledge sharing (KS) is in reference to the extent to which someone has feelings that are positive with regards to the sharing of knowledge. Attitudes towards KS were examined by Bock and Kim (2002), who found that it had a positive impact upon intention regarding the sharing of knowledge. It was revealed within a further

study that Ryu et al. (2003) undertook that the attitudes of physicians towards knowledge sharing influenced their intentions to knowledge share. In a study undertaken by Kim and Ju (2008), the factor that was found to have most influence upon the faculty of knowledge sharing was perception; as such, the belief was there that knowledge sharing between academics and associated colleagues and so forth was mainly down to attitude.

Within this current study, the research model uses the planned behaviour theory as its theoretical framework for analysing the motivational factors impacting upon the knowledge sharing behaviours present among knowledge workers. A number of key factors that impact upon knowledge sharing were discussed in the literature and have been incorporated within the model employed within this study. A questionnaire, that was used already within the work of Blau (1964), is employed within the quantitative element of this research. Factors are included within the research work of numerous authors and are reflected also within the model of Bock and, hence, within the planned behaviour theory. Those authors are, as follows: Al-Kurdi et al. (2018), Skaik and Othman (2015), Goh and Sandhu (2013), Tohidinia and Mosakhani (2010), Cheng et al. (2009), Kankanhalli et al. (2005), Bock et al. (2005), Constant et al. (1994), Davis (1989), Fishbein and Ajzen (1975) and Fishbein and Ajzen (1981). Both the organisational factors and beliefs are consequently impacted by the subjective norm comprising the motivation for sharing and the associated norms. This research, however, has the intention of assessing the intentions and behaviours of academics based at the University of Baghdad; as such, there was the inclusion of certain dimensions that are particular to academia.

3.1. Attitude towards Knowledge Sharing Behaviour

It was shown a number of years ago that attitude was a significant organisational behavioural intention predictor and, indeed, a substantial amount of empirical research has been presented that supports that relationship. For instance, in undertaking research to test a model of knowledge sharing through a survey of thirty organisations, Bock et al. (2005) presented findings that suggested that behavioural intention was significantly and positively impacted by attitudes towards knowledge sharing. In addition, research was undertaken by Kwok and Gao (2005) based upon reasoned action theory that had an investigation of individual attitudes with regard to knowledge sharing by examining three variables, namely extrinsic motivation, channel richness and absorptive capacity; these factors were considered with regard to the bearing they had upon the attitudes of people towards knowledge sharing. The relationships between attitude and those three variables were tested through the conducting of a structural survey, and the findings showed that there was no impact from extrinsic motivation upon individual attitudes regarding knowledge sharing. However, a significant role was found to be played by the other 2 factors. Various variables in relation to attitude with respect to knowledge sharing behaviour have been applied within this particular research to serve as the background for attitude with regard to knowledge sharing. These particular factors are discussed in greater detail in the following section. The current study variables depict in Table 1.

Table 1. The current study variables.

Variables	Sources	Findings
Organizational climate	Bock et al. (2005)	The study conclusion was that organisational climate and attitudes towards KS had an impact on the intention to share and a sense of self-worth.
Sense of Self-worth	Ramayah et al. (2013)	The attitude of academics towards KS is affected by the key determinants of sense of self-worth, subjective norm, extrinsic motivation and reciprocal relationships.
Anticipated reciprocal relationships	Bock et al. (2005).	Anticipated reciprocal relationships have a positive effect on academics' knowledge sharing intention.

Table 1. *Cont.*

Variables	Sources	Findings
Perceived reciprocal benefits	Blau (1964).	Perceived reciprocal benefits have a positive effect on academics' knowledge sharing intention.
Tools and Technology	Van Den Hooff and De Ridder (2004); Kim and Lee (2006); Chennamaneni (2006)	Various different variables have been identified within the research in relation to the factors that do have an effect on KSB. These range from 'soft' to 'hard' issues such as the tools and technologies employed.
Self-efficacy	Kuo and Young (2008)	Followed the work of Bandura (1997) with an examination of KSB founded upon social cognitive theory and discovered that perceived self-efficacy of KS had a statistically significant impact from perceived self-efficacy of KS.
Interpersonal interactions	Shier et al. (2018); Hiratsuka et al. (2019); Dehghani (2020).	Most researchers found this variable to have a significant relationship and impact on organisational staff and cross culture.
Anticipated extrinsic rewards	Wang et al. (2019); Kumar and Shanthini (2020); Mirkovski et al. (2019); Murayama (2022).	Anticipated extrinsic rewards, shows significantly ?? and motivation the desire to serve customers well, which in turn positively affects the willingness to offer free services and as well as paid services to develop organisational marketing strategies.

3.1.1. Organisational Climate

Organizational climate (OC) significantly influences subjective norms (SN), consistent with Bock et al.'s (2005) study. Higher perceptions of OC promoting knowledge sharing (KS) are associated with stronger formation of subjective norms towards KS. The field of organizational and industrial behavior and psychology has a long history of studying OC, originating from Kurt Lewin's work in the 1930s. Lewin identified elements like needs, stimuli, goals, social relations, organizational freedom, and the environment's friendliness or hostility as important when addressing OC. As far as Lewin et al. (1939), suggested that climate can alter observed group members' behavior patterns, surpassing the influence of acquired tendencies. The organizational climate theory proposes that managers can influence workers' role perceptions by adjusting expectations through training or group membership changes. OC reflects employees' feelings about the organizational atmosphere. Notably, OC impacts the performance of administrative and academic staff at the University of Cyprus. It is also associated with attitudes toward change, improvement, and innovation in higher education institutions. Rahimić (2013) found a positive relationship between employee satisfaction, performance, and OC.

While evidence supports the positive impact of OC in the workplace, limited research has focused on academic staff performance in higher education settings. Therefore, this study aims to investigate the influence of OC on academic staff performance at the University of Baghdad. The first hypothesis proposes that OC has a positive effect on knowledge-sharing intention among academics.

H1: *There is a positive and significant relationship between the intention to share knowledge and organizational climate.*

3.1.2. Sense of Self-Worth

Acts of KS are interaction processes that are ongoing and need suitable feedback. It has been expressed that if others make responses in a manner that had been anticipated, then there is a tendency to conclude that the initial behaviour and line of thinking were correct (Kinch 1963). It was claimed by Gecas (1990) that a process of reflected appraisal is, indeed, instrumental to the formation of the self-worth of an individual which, in turn, is strongly affected by that person's sense of competence, as noted by Covington and Beery (1976), and has close ties to effective performance, as noted by Bandura (1977). Through the feedback that has been received based on previous occurrences of the sharing

of knowledge, academics can observe how such activities have helped in the working lives of others and/or aid in improving the performance of organisations.

With an understanding that such KS actions have contributed to improvement in others and would, accordingly, have a boosting effect on the sense of self-worth, there would, accordingly, be a tendency amongst academics to develop attitudes towards KS that are more favourable in comparison to the attitude of others less able to see such links (Bock et al. 2005). As such, the second research hypothesis is that a sense of self-worth has a positive effect on academics' knowledge-sharing intention.

H2: *There is a positive and significant relationship between the intention to share knowledge and the sense of self-worth.*

3.1.3. Anticipated Reciprocal Relationships

In general terms, the proposition that there is a positive impact for knowledge sharing from reciprocity is supported by the empirical evidence. Bock et al. (2005) discovered there to be a strong link between the anticipated reciprocal relationship and the attitude towards the sharing of knowledge. The definition for anticipated reciprocal relationships has been noted as being the extent to which someone believes that the sharing of their knowledge may result in improvement in their mutual relationships (Bock et al. 2005; Al-Kurdi et al. 2018). Knowledge does not have an exact price, and so it can be considered as a commodity that is intangible. Individuals may be motivated to offer others their knowledge to help maintain good relationships with members of their social circle (Short et al. 1976). If it is supposed that academics consider their relationships and mutual interactions may be improved through the sharing of knowledge, they would be considered to have favourable perceptions and dispositions embedded within their minds with regard to knowledge sharing and its benefits. So, based upon the discussion above, there can be formulation of the hypothesis that follows:

H3: *There is a positive, significant relationship of intention towards knowledge sharing with anticipated reciprocal relationships.*

3.1.4. Perceived Reciprocal Benefits

Perceived reciprocal benefit significance shows that there is a likeliness of knowledge workers engaging in the sharing of knowledge with expectations that, in the future, they will receive help from others in return. Within the knowledge sharing context, the definition for reciprocity is an expectancy that benefits from future requests for knowledge will be met due to the current contributions that are being made (Kankanhalli et al. 2005; Cheng et al. 2009; Goh and Sandhu 2013; Skaik and Othman 2015; Al-Kurdi et al. 2018). It was noted by Fehr and Gächter (2000) that reciprocity is a sort of conditional gain in that people have an expectation that present actions they are making will result in benefits in the future. In order for knowledge to be contributed, the individuals in question need to believe that is worth making such a contribution. It was considered by Davenport and Prusak (1998) that the time, knowledge and energies of people have their limits and so, other than when a profit can be gained, it is normally the case that people have an unwillingness to share scare resources with different individuals. In a team scenario, there is a greater willingness for sharing good ideas and there is a tendency to anticipate the same behaviour from others. Hsu and Lin (2008) noted that expected reciprocal benefits are related to the extent to which a person believed they could acquire mutual benefits from the sharing of knowledge. It has been shown in previous research that when the sense of reciprocity is strong, knowledge sharing in online communities is facilitated (McLure-Wasko and Faraj 2005). So, based upon the discussion above, there can be formulation of the following hypothesis:

H4: *There is a positive, significant relationship of perceived reciprocal benefits with the intention to knowledge share.*

3.1.5. Tools and Technology

Tools and technology play a crucial role in knowledge sharing (KS) as a mediating factor. Information technology is an essential tool for effective knowledge management implementation (Bhatt 2001; Kim et al. 2003). However, the mere functioning of ICT as a KS platform is not enough to encourage KS; motivation for knowledge sharing must be considered (Hendrickson 1999). Brazelton and Gorry (2003) emphasized that technologies alone may not effectively promote KS activities. Kim and Jarvenpaa (2008) highlighted the significance of existing relationships between communicating parties in shaping technology-enabled knowledge activities. Suneson and Heldal (2010) suggested that understanding other organizations' perspectives on technology is crucial for the efficient use of complex technology in joint collaborations.

In the realm of social development and knowledge creation, socio-cultural perspectives emphasize learner interventions and interactions within culturally organized activities (Mercer 2002; Naraian 2011; Maskit and Firstater 2016). Technology serves as mediation for skills development within educational programs, supporting knowledge creation. Globalization and technology enable knowledge recreation for societal development and skills enhancement (Biao 2011). Skills, professional identity, and knowledge are vital in fostering learning processes and social development within the field of education (Grossman and McDonald 2008). Based on the literature, the hypothesis posits that tools and technology have a positive impact on academics' intention to share knowledge.

H5: *There is a positive and significant relationship between the intention to share knowledge and the use of tools & technology.*

3.1.6. Self-Efficacy

Self-efficacy, defined as an individual's belief in their capabilities to perform specific behaviors, is a cognitive force that guides behavior (Pavlou and Fygenson 2006; Bandura 1997). In the context of knowledge sharing (KS), self-efficacy relates to an individual's confidence in providing valuable knowledge to others (Kankanhalli et al. 2005). Previous research has shown that individuals with strong knowledge self-efficacy are more likely to be self-motivated in promoting KS (Bock and Kim 2002; Hsu et al. 2007). Bandura and Locke (2003) noted that self-efficacy influences an individual's intentions and plans for realizing efficacy-related behaviors.

Studies conducted in Malaysia have identified organizational rewards and the availability of information and communication technology (ICT) systems as significant barriers to KS, with a small negative correlation found between knowledge sharing and self-efficacy (Amin et al. 2011). The theory of planned behavior (TPB) has also shown strong relationships between elements of TPB and knowledge sharing behavior, including anticipated reciprocal relationships, perceived self-efficacy, organizational climate, and technology usage levels (Tohidinia and Mosakhani 2010).

In addition, academic self-efficacy plays a vital role in fostering learning engagement among students. Those with higher academic self-efficacy tend to be more involved in learning processes, while lower levels of academic self-efficacy are associated with indifference in the classroom (Caraway et al. 2003; Bassi et al. 2007). Academic self-efficacy acts as a motivational force, influencing a person's confidence in accomplishing academic tasks and driving their adoption of learning strategies (Bandura et al. 1999). Based on the existing literature, the hypothesis is that self-efficacy has a positive effect on academics' intention to share knowledge.

H6: *There is a significant positive relationship between the intention to share knowledge and self-efficacy.*

3.1.7. Anticipated Extrinsic Rewards

Often, knowledge is considered a marketable type of good that may be bought, put into storage and then be made accessible to a third party through the use of market exchange

means (Antal and Richebe 2009). Additionally, knowledge sharing can be considered a communicative type of act between people requiring both time and effort (Gibbert and Krause 2002). So, individuals only share their knowledge with others when they perceive there to be direct returns following on from their actions. Expressed another way, the sharing of knowledge only occurs when the costs are exceeded by the rewards (Kelley and Thibaut 1978; Constant et al. 1994). Usually, knowledge sharing is described as a type of process that is founded upon the estimation of costs and benefits and that is free of emotion (Antal and Richebe 2009; Al-Kurdi et al. 2018). There are several cases where organisations have been successful in employing systems of reward that encourage knowledge sharing amongst employees. For example, within the Siemens project, ShareNET, there was an effective motivation of employees in the sharing of their knowledge through the use of explicit rewards (Ewing and Keenan 2001).

According to Bartol and Srivastava (2002), a significant portion, specifically one-quarter, of the evaluation criteria for assessing the overall customer support performance of employees at Lotus Development Company is attributed to the extent of their engagement in knowledge sharing activities. Similarly, within universities there are functions that are built-in for rewarding performance that result from the sharing of knowledge. For instance, those academics that are successful in having their research articles published within journals with a top ranking will receive rewards in terms of opportunities for promotion and monetary incentives. Therefore, there is an expectation that there will be motivation for academics to share knowledge if their acts of sharing are compensated through the receipt of extrinsic benefits, e.g., greater salaries, wage increases or promotions. So, based upon the discussion above, there can be formulation of the hypothesis below:

H7: *There is a positive, significant relationship between intention to knowledge share and anticipated extrinsic rewards.*

3.1.8. Interpersonal Interactions

Prior to delving into the examination of factors that facilitate or inhibit knowledge sharing, it is essential to develop an understanding of the underlying rationale that drives human behaviour and the reasons behind their attitudes towards knowledge sharing. When individuals make decisions regarding the sharing of knowledge with their colleagues, they typically take into account several aspects, including the potential benefits and costs involved, their motivations, interpersonal relationships and personal expectations. Exploring these elements provides valuable insights into the dynamics and intricacies of knowledge sharing within a social context. In social science, consideration is given to both psychology and sociology since they are believed to be informative to understanding behaviours regarding knowledge sharing; as such, a focus is placed upon the relationships that exist between the microfoundation of the individual and the social environment within which he or she operates (Hollander and Howard 2000; Felin and Foss 2005; Foss et al. 2010; Hislop 2013).

It has been suggested that personal relationships and networks operate by way of processes of social exchange (Weir and Hutchings 2005). Since social exchanges are complex activities, various elements of knowledge sharing have been highlighted within various research projects. A number of researchers have employed social exchange theory for the examination of relationships between trust and fairness/justice as key interpersonal relationship elements in relation to the sharing of knowledge (Organ 1990; Robinson 1996). It is important to examine trust and fairness, since the sharing of knowledge involves the provision of knowledge accompanied by expectations that there is reciprocity, either to a collective, e.g., team or practice community, or with another individual (Collier 2008; Wu et al. 2014). It was emphasised by Constant et al. (1994) that self-interest and context are important for knowledge sharing, whereas reciprocity was emphasised in the work of (Wu et al. 2014).

A theoretical foundation for relationships between fairness and knowledge sharing was gleaned from equity theory along with other theories of social exchange that seek to provide explanations for relational satisfaction that are based upon perceptions of the fair

or unfair distribution of resources in interpersonal relationships. The common belief is that fair treatment is valued by people and that motivates them towards maintaining fairness in their dealings with their co-workers and within the organisation in general. People need to have the perception that there is a balance that is fair between inputs and outputs. As was mentioned above, the theory of social exchange by Blau (1964) demonstrated that if people sense that their contributions are sufficiently and justly satisfied by outputs, then they are happier and more motivated to keep on inputting to the same degree.

Lind and Tyler (1988) argued that fairness within procedures had importance for the fostering of trust in relationships between supervisors and employees; indeed, ensuring there are fair outcomes at work for the team members is an essential aspect to the establishment of trust. In alignment with the equity theory put forward by Adams (1965), Robinson and Morrison (1995) argued that employees have a tendency to avoid helpful behaviours if bad outcomes are provided by the employer. Generally, interpersonal interactions are considered a key psychological barrier to knowledge sharing. Therefore, the researcher has brought that factor forward from those other theories so that it is incorporated into the variable standing in for attitude with regard to knowledge sharing, in order to test that as well as other factors hailing from the planned behaviour theory. So, based upon the discussion above, the hypothesis that follows may be formulated:

H8: *There is a positive, significant relationship between interpersonal interactions and intention to share knowledge.*

4. Methods

The primary objective of this study is to identify effective strategies for motivating academics at the University of Baghdad to engage in knowledge sharing behaviour (KSB). In order to achieve this research aim, several research objectives have been established, which are outlined below:

To apply and validate the measurement of attitude towards knowledge sharing as a means to assess KSB among academics at the University of Baghdad.

To apply and validate the measurement of the subjective norm as a way of evaluating KSB among academics at the University of Baghdad.

To apply and validate the measurement of perceived behavioural control as a means to gauge KSB among academics at the University of Baghdad.

To develop and test a conceptual framework that highlights the critical factors influencing KSB among academics at the University of Baghdad.

To propose practical recommendations for fostering KSB among academics at the University of Baghdad.

Through these research objectives, this study aims to provide valuable insights and practical guidance for promoting a culture of knowledge sharing among academics at the University of Baghdad.

With a basis taken from the discussion above, this research study is a descriptive one in attempting to present an investigation of the challenges for knowledge sharing in Iraqi universities. This sort of strategy can involve description of all sorts of relationships, events and roles at the individual, social group or community levels (Robson 2002). In accordance with the main aim of the study, it is descriptive and aligned with the research objectives. The aim of descriptive research is to explain the characteristics of the study participants and provide estimates of unit percentages for a particular population that exhibits specific kinds of behaviour; as such, the research has the aim of describing attitudes, problems or situations in a systematic manner (Robson 2002; Vaismoradi et al. 2013). This study has employed quantitative research since: Firstly, the study is comparative research and quantitative data can be compared more easily. Secondly, ambiguity can be avoided in the collection of objective data. Thirdly, large volumes of quantitative data are easier to analyse than equivalent volumes of data that is qualitative.

Hair et al. (2010) assert that structural equation modelling (SEM) is an appropriate and efficient technique for simultaneously estimating multiple regression equations. SEM

comprises two components: the structural model and the measurement model. Its purpose is to evaluate the overall fit of the model and confirm that the estimated model aligns with the theoretical model (Diamantopoulos and Siguaw 2000; Hair et al. 2010; Tabachnick and Fidell 2001).

The use of structural equation modelling (SEM) allows for a rigorous assessment of construct validity, ensuring that the intended theoretical meaning of a construct is empirically captured by the relevant indicators. By employing SEM, researchers can rigorously evaluate the relationship between constructs and their measurement, providing a robust framework for validating theoretical models.

In summary, SEM serves as a powerful tool in estimating multiple regression equations simultaneously. It consists of a structural model and a measurement model, which collectively assess the fit between the estimated and theoretical models. Through SEM, researchers can rigorously evaluate construct validity and confirm that the empirical indicators capture the intended theoretical meaning of the construct.

4.1. Data Collection and Sampling

The data collection for this research took place at the University of Baghdad in Iraq and involved a questionnaire survey approach conducted from October 2015 to January 2016. Various departments within the university were sampled, and potential participants, including lecturers, professors, assistant professors and assistant lecturers, were randomly selected. The survey participants were chosen proportionately to represent different categories of academic faculty members. Multiple reminders were sent to non-respondents after the initial two weeks to ensure data collection integrity. Participants had the flexibility to respond at their convenience and from any location, ensuring their voluntary participation.

Despite the slightly dated nature of the data, it remains valuable and applicable within the unique context of Iraq. Since 2016, there have been limited changes to the situation, primarily due to ongoing security concerns and the impact of the COVID-19 pandemic. Furthermore, research specifically focusing on knowledge sharing (KS) in the education sector of Iraq is still limited, highlighting the need for further investigation and attention in this area. The availability and accessibility of the data is accessible, stored in a repository in the aforementioned institution.

Data analysis was carried out using SPSS for Windows (Version 23). Descriptive statistics and exploratory factor analysis were employed to assess the data. Confirmatory factor analysis, based on structural equation modelling (SEM), was then performed to validate the factors identified in the exploratory analysis. AMOS software (Version 28) was used to evaluate the model fit. The participants' responses were coded numerically for entry into the SPSS spreadsheet. A 5-point Likert scale was utilized to gather respondents' attitudes towards knowledge sharing, ranging from "Strongly disagree" (1) to "Strongly agree" (5), with missing data represented by a value of 99. To ensure data cleanliness, descriptive statistics tests and frequency tests were conducted to identify any unexpected entries, missing data or typographical errors.

The research was conducted within the context of the University of Baghdad, which has a diverse academic population of 6642 across 24 colleges and four higher study institutes. A total of 578 questionnaires were distributed to academic staff from various faculties. After removing incomplete or biased responses, 326 questionnaires were included in the final analysis using SPSS software. The response rate was approximately 56%, indicating a sufficient sample size for reliable correlations and predictive power. The techniques employed in data collection and analysis were informed by the works of Hair et al. (2010) and Tabachnick and Fidell (2001).

4.2. The Demographic Statistics

So that we could determine the potential participants who were suitable for inclusion within the research, each of them was asked a number of categorical and personal questions; then, the relevant beneficiaries could have a presentation of an overview of the

study (Howitt and Cramer 2008). Within this section there is a description of the participant demographics from the various departments of the university. The demographic distribution for the academics was based upon gender, age, tenure, qualifications and profession (see Table 2). The percentage for male participants was 73.3% (with n equal to 239); the female participant percentage was 26.7% (with n equal to 87). It can be seen that female participants were outnumbered greatly within the study, the main reasons being the social and cultural factors that have an impact in the region. There was a grouping of the participants into five different categories in relation to age (see Table 2). It may can be seen that 7.1% of the participants (with n equal to 23) had ages between 25 years and 30 years of age, 36.9% of the participants (with n equal to 129) had ages between 31 years and 40 years of age, 28.8% of the participants (with n equal to 94) had ages from 41 years and 50 years of age, 21.8% of the participants (with n equal to 71) had ages from 51 years to 60 years of age and the lowest respondent numbers were those aged 61 years or more, who comprised 2.8% of participants (with n equal to 9). The assumption may be made from those results, given the nature of work undertaken, that at the University of Baghdad the age group that is preferred (i.e., the highest participant percentage) is those in the group from 31 years of age to 40 years of age.

Table 2. The demographic statistics for the sample from the University of Baghdad.

Characteristic	Groups	Frequency /Percentage		Overall Sample	
		No	%	No	%
Gender	Male	239	73.3	326	100
	Female	87	26.7		
Age	61 or over	9	2.8	326	100
	51–60	71	21.8		
	41–50	94	28.8		
	31–40	129	39.6		
	25–30	23	7.1		
Academic profession	Professor	67	20.6	326	100
	Assistant professor	32	9.8		
	Lecturer	133	40.8		
	Assistant lecturer	94	28.8		
Academic qualification	PhD	201	61.7	326	100
	Master	125	38.3		
Tenure	26 or more years	41	12.6	326	100
	21–25 years	49	15		
	16–20 years	80	24.5		
	11–15 years	95	29.1		
	6–10 years	38	11.7		
	1–5 years	23	7.1		

(Please note: No = number and % = percentage).

Furthermore, the percentages for the professions of the participants and their frequencies are shown in Table 2. Lecturers were the biggest group of respondents, comprising 40.8% of participants studied (n equal to 133); the group that was the second biggest were the assistant lecturers, comprising 28.8% of participants (n equal to 94). Professors formed 20.6% of participants (n equal to 67), with the smallest participant group being assistant professors, forming 9.8% of participants (with n equal to 32). There was also the formation of groups of respondents in accordance with the level of academic qualifications that they had achieved. This categorisation showed that 61.7% of participants had obtained a doctorate and 38.8% had reached a master's degree level. With regard to tenure, there was grouping of respondents in accordance with the length of time that they were in their particular position. The findings for tenure were as follows: 7.1% of respondents had held

their particular role for a 1-year to 5-year duration, 11.7% of participants had been in their particular post for 6 years up to 10 years, 29.1% of participants had been in their particular post for 11 years up to 15 years, 24.5% of participants had been in post for 16 years up to 20 years, 15.0% of participants had been in post for 21 years up to 25 years and, lastly, 12.6% of participants had been in their particular post for 26 years or over.

5. Findings

The thresholds of model fit for the final model of measurement are listed below in Table 3. There was achievement of a good model fit once the necessary adjustments were made to constructs in the section above. An examination was undertaken of the overall model fit for the data observed, so that the validity of the model could be assessed. Absolute and incremental fit indices were shown, with the discovery that both the independent and dependent proposed constructs were represented adequately by the model. So that the goodness of model fit could be measured, there was application of NFI and CFI measures, the indices figures were 0.91 and 0.94, respectively, which were values that were above the 0.90 criterion value (Lau 2011; Wang and Wang 2012). The GFI and AGFI were 0.88 and 0.85, respectively, which may be considered acceptable as the criterion for acceptability put forward by Etezadi-Amoli and Farhoomand (1996) was 0.80. Since both the values for GFI and AGFI were in the range considered acceptable, the fit of the model was also considered acceptable. Therefore, the absolute fit measures showed that the structural equation model was representative of a satisfactory fit for the data sample collected. A conclusion may be drawn then that the model proposed maintained a good fit in relation to the data observed. To summarise, the final-order results for the CFA showed that the constructs that were employed within the model of measurement had validity and reliability that were adequate in nomological, discriminant and convergent terms. As such, the results gave confirmation that the data were fitted by the model and showed that there was no need for further refinement of the model.

Table 3. Final order of model fit.

Goodness of Fit (GOF) Measure	x^2/Degree of Freedom	NFI	TLI	GFI	AGFI	CFI	RMR	RMSEA
Criterion	≤ 3	>0.9	>0.9	>0.8	>0.8	>0.9	<0.05	<0.10
Second Model	1.766	0.917	0.955	0.893	0.864	0.962	0.043	0.049
Actual Model	2.178	0.91	0.938	0.886	0.851	0.948	0.045	0.06
Comments	Validated	Validated	Validated	Validated	Validated	Validated	Validated	Validated

5.1. First-Order Model of Measurement

There was testing of the research hypotheses based upon the structural model through the use of the critical value (t value) as well as the standardised estimate. So that the data could be analysed, there was employment by the researcher of Amos 28 (Windows based) software in the running of the model so that the hypotheses could be examined. Within Table 4, there is the demonstration of the results in summary. There was examination of seven hypotheses within this research through the use of critical ratio (t values) and path estimates. Six of those seven hypotheses had t-values that were over the critical values of 1.96 at significance level of 0.01. It was found that the other construct in relation to dependent variables had negatively significant t-values (a t of −3.134 with *p* of 0.002).

The aim of this paper is to examine the causal relationships between the independent variables and the dependent variable. There was selection of the independent variables for this research from the three differing scales of subjective norm, attitude with regard to knowledge sharing and perceived behavioural control. OC and SSW had a relationship with subjective norm and TT and SE had a relationship with perceived behavioural control; the remaining ARR, PRB and AER were related to the attitudes towards the sharing of

knowledge. It can be seen in Table 4 how all of the estimates of the final order were significant and positive other than self-acknowledgement, which appeared as negative.

Table 4. Regression weights.

DV	Intention	Intention	Intention	Intention	Intention	Intention	Intention
	↓	↓	↓	↓	↓	↓	↓
IDV	OC	SSW	ARR	PRB	TT	SE	AER
Estimate	0.242	0.177	0.079	0.054	0.246	−0.155	0.047
S.E.	0.027	0.026	0.024	0.023	0.019	0.05	0.019
C.R.	9.1	6.729	3.328	2.359	12.797	−3.134	2.551
Sig	***	***	***	0.018	***	0.002	0.011

(Note: Estimate = regression weight; S.E. = standard error; C.R. = critical ratio, Sig = ***).

5.2. Second-Order Model of Measurement

There can be achievement of a good fit for the model through following the adjustments required to the constructs of the section. Overall, it was revealed that the assessment of the measurement model had fitness for the scale for all eight factors extracted by the EFA. So that the validity of the nomological scale could be confirmed, there was assessment of the tests for the fit element; it was found to have a good fit (See Table 4) (Steenkamp and Trijp 1991; Lages 2000). The item covariance was tested for their measurement of factors by way of a confirmative factor analysis. As can be seen in Figure 1, six items within three factors had covariance; those items that were in covariance with one another were e13 with e11 within the factor of ARR, e19 with e17 within the factor of TT and e23 with e20 within the factor of SE. It was found for the hypotheses that the paths that were between the independent and dependent variables had significance in statistical terms, other than SE (self-acknowledgement), which loaded to show negative significance. The analysis revealed that the variables SSW, PRB, ARR, AER, TT, OC and SSW significantly influenced knowledge sharing intention behaviour.

It was discovered that the initial independent variable for the professional environment had a positive and significant relationship with the dependent knowledge sharing intention behaviour variable, with β equal to 0.242, a *p* value of < 0.01 and t at 9.100; thus, there was acceptance of H1. For the second independent predictor, SSW was discovered to have an influence on the dependent variable with a relationship that was positive and significant with knowledge sharing intention behaviour, with the level for β at 0.177 and the *p* value at <0.01 with the value of t at 6.729; so, H2 was accepted. Amongst data in relation to the intention of performing knowledge sharing behaviour, there was found to be a statistically significant impact hailing from ARR, with the value of β at 0.079 and the value of *p* at <0.01 with the t value at 3.328; as such, H3 was also accepted. Structural equation modelling evaluation of the relationships between the independent predictors and the dependent variable showed that, as dependent variables, variables are determinants for knowledge sharing intention behaviour. As Table 3 shows, the standardised estimates and the t-values showed that the paths for the initial three independent factors around the dependent factor had statistical significance and were positive. PRB, the fourth independent predictor, was found to be in a significant, positive relationship with the dependent variable for behaviour in relation to the intention of knowledge sharing, with the value of β at 0.054 and a *p* value of < 0.01 with t value at 2.359; as such, H4 was also accepted.

Among the different variables, TT had the largest impact on the dependent variable, knowledge sharing intention behaviour, with a β value of 0.246 and a statistically significant *p*-value of < 0.01 indicated by a t-value of 12.797. Therefore, hypothesis 5 was accepted. Additionally, the analysis revealed a significant and negative relationship between SE and knowledge sharing intention behaviour, with a β value of −0.155 and a *p*-value greater than 0.02 indicated by a t-value of −3.134.; as such, H6 was strongly rejected. There was

also found to be a significant, positive relationship for the impact of the final independent predictor, AER (expected rewards), with a value for β at 0.047 and a *p* value of >0.01 with the value for t at 2.551; as such, H7 was accepted. The results indicate that out of the seven independent variables, six demonstrated positive and significant relationships with the dependent variable, knowledge sharing intention behaviour. Furthermore, the other predictor findings confirmed a positive and negative (forcefully rejected) relationship between the self-acknowledgement predictor and the dependent variable.
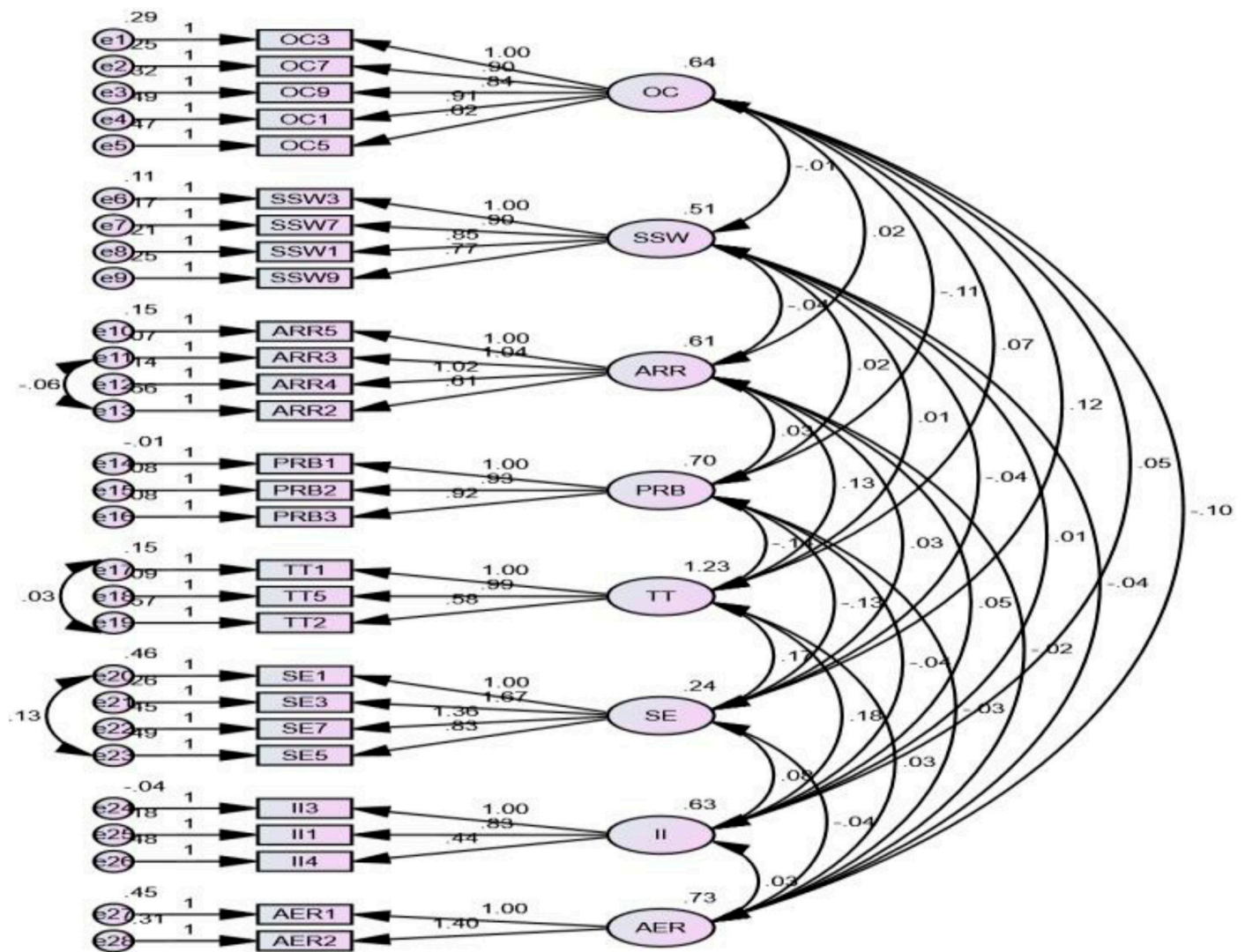
Figure 1. Second-order measurement model.

All of those variables had relationships that were statistically positive and significant with the intention towards KS. The interpersonal interactions factor, however, was excluded from the final run of the CFA; it did not have its own measured set of measured indicators-though, instead, they linked in an indirect way to indicators that measured lower-order factors. The suggestion from this is that, if all other things are equal, the greater the positivity perceived in the attitude, the greater the intention towards KS that will be noted at the University of Baghdad. These results suggest that academics are more inclined to engage in sharing knowledge, as shown in Table 5.

Table 5. Results summary for hypotheses testing.

Hypotheses	Sig	Outcome
H1: Organisational climate -> Knowledge sharing intention	**	Supported
H2: Sense of self-worth -> Knowledge sharing intention	**	Supported
H3: Anticipated reciprocal relationships -> Knowledge sharing intention	**	Supported
H4: Perceived reciprocal benefits -> Knowledge sharing intention	*	Supported
H5: Tools & technology -> Knowledge sharing intention	**	Supported
H6: Self-efficacy -> Knowledge sharing intention	*	Rejected (Strongly)
H7: Anticipated extrinsic rewards -> Knowledge sharing intention	*	Supported

(Note: * $p < 0.05$, ** $p < 0.01$).

6. Discussion

Established in 1957, Baghdad University is among Iraq's oldest and most prestigious institutions and is recognized as a role model for universities in the Middle East. Despite political unrest and regional conflicts, it maintains a vibrant research environment, fostering innovation and interdisciplinary collaboration. Challenges have impacted its operations, infrastructure and educational opportunities for students. Nonetheless, the university remains committed to academic excellence, contributing to scientific progress and nurturing intellectual growth. Baghdad University's resilience and dedication reflect its enduring legacy and commitment to advancing knowledge and societal development.

By way of a survey involving 326 academics, there was theoretical model validation undertaken for the context of a single empirical research study. Significant support was provided by the findings for the model of the research, with approximately 56% of variance accounted for with the intention for KS behaviour. Of the hypotheses set forward, six of the seven relationships were supported and so the indication from the findings was that all research objectives had been achieved. Therefore, it was demonstrated mean that the intention of academics towards KS may be used to predict knowledge sharing behaviour. In turn, intention for KS could be predicted by the attitude of academics towards KS, the subjective norm and perceived behavioural control. Perceptions of academics towards expected rewards, apparent mutual benefits and expected mutual relationships were associated positively with possessing a favourable attitude with regard to KS. The professional environment and self-confidence influenced the subjective norm of academics positively, and perceived behavioural control also associated positively with the facilitation of methods and techniques. Perceptions of self-acknowledgement exerted an effect upon perceived behavioural control that was negative.

Based upon the findings, there was the employment of SEM for the testing of the hypotheses in relation to the relationship with variables for the University of Baghdad. There was discussion within the study of the implications that the intention for knowledge sharing in the context of the workplace has for both theory and practice. Overall, the findings from the research do advance the field from the previous studies in the KS field by showing further information with regard to KSB determinants among academics. The research helps in deepening a collective comprehension of the processes related to the attitudes that lie behind the contexts that help to induce KSB. Moreover, in addition to providing a contribution to theory, the findings from the study offer insights regarding the working practices that could be employed by organisations for developing environments that are realistically conducive for KS. This research addressed the problem of a dearth of models that are built for investigating KSB in higher education institutions in developing countries, let alone Iraq. This research proposed a model that was examined by a monomethod that was quantitative and that was described above in the methodology chapter.

Through the use of SEM, it was discovered by the researchers that academics, for the purposes of long-term survival, rely on the help and support of their other colleagues. An attitude that is self-oriented can work over the short-term for an academic, though not

over a longer period; this truth is one that academics tend to recognise in general. So, there is a widespread belief that relationships with existing colleagues are strengthened by KS and that helps cooperation with colleagues in the future be smoothed through the cultivation of an attitude towards KS that is optimistic. Moreover, by realising that KS has more helpful implications than harmful ones for the university in general, the feelings of an individual with regard to KS tend to be enhanced and that explains why a positive association exists between self-confidence and intention with regard to knowledge sharing. So that the benefits that result from acts of KS can be realised, there is a need for individuals to have greater awareness of the expectations amongst other individuals with significance with regards to KSB and to possess a greater degree of compliance to those expectations. Therefore, there has been clarification of the positive influence of self-confidence (see hypothesis H2) upon the factor of subjective norm. As with the work of Mousa et al. (2019) and Bock et al. (2005), this research has shown that a positive impact upon the subjective norm hailed from the professional environment; the higher that the perceptions were in relation to a professional environment having conduciveness to KS, then the higher the subjective norm formation regarding intention for knowledge sharing.

So, the professional environment impacts directly and significantly upon intentions with regard to the sharing of knowledge; as such, these findings suggest that the professional environment will impact upon knowledge workers in a motivational way with regard to their knowledge sharing with colleagues. Those findings have consistency with those put forward by Jarvenpaa and Staples (2000), which identified formal cultural dimensions that give support to KS as forms of collectivism, with the need for solidarity, sociability, suitable orientation of employees and a sense of achievement. Additionally, the research findings confirmed the findings in the work put forward by Ajzen and Fishbein (1980) that noted that factors that are external, including the professional environment, can impact upon the subjective norm of an individual through the provision to them of cues over what types of behaviour are expected of them or that are considered desirable. That finding has consistency with those previous findings by demonstrating that the professional environment (see H1) contributes to KSB significantly (Lin 2007; Lin et al. 2008).

By making relationships that are friendly, teamwork can foster further opportunities for the exchange of knowledge amongst employees and that strengthens the trust levels in their working relationships. In addition, without the support of the organisation to protect and encourage innovation and teams that are innovative, the staff are unable, in general, to have innovativeness within their work. Recently, universities have become more and more competitive, with academics seeking to win awards, research grants, promotions, higher positions and titles. Instincts for survival can drive academics on to have a cautious approach towards knowledge sharing since they could feel that knowledge sharing may weaken their own personal position. Human beings, however, do not always act in ways that accord with those types of instincts and based upon the findings and their mean values in relation to extent of knowledge sharing, it is clearly noticeable that a modest attitude level with regard to knowledge sharing is encouragingly present in local universities. There is verification from the situation of the University of Baghdad that academics acknowledge frequent knowledge sharing has importance within their daily working lives. The findings from the research in relation to expected rewards (see H7) have consistency with the findings of previous studies.

It has been suggested that effective motivation to encourage people to share knowledge may result from the relevant explicit monetary rewards (Hu and Randel 2014). For example, within the Siemens project known as ShareNet, there was motivation for employees to share their knowledge through the use of explicit rewards (Ewing and Keenan 2001). Similarly, Samsung Life Insurance had a Knowledge Mileage Program that saw rapid growth for registration of employee knowledge because of the employment of points for redemption (Hyoung and Moon 2002). In addition, the argument has been put forward that organisational rewards encourage KS (Yu et al. 2005). Similarly, the study findings in relation to the H3 hypothesis are in alignment with previous research that has indicated

that there is a positive influence from expected mutual relationships. With regard to the findings related to the perceived reciprocal benefit (see H4), these too revealed a positive, significant effect upon attitude towards KS.

PRB significance provides a certain amount of indication of the likelihood that knowledge workers have in terms of the sharing of knowledge, with the expectation that KS will result in receipt of help in the future. That finding shows that significant personal benefits will be derived by an individual by way of knowledge sharing, such as enhanced reputation, increased social affiliation, increased competence, greater feelings of commitment to the organisation and heightened self-esteem and pride. This study has findings consistent with those from previous research that showed that there was involvement of expected reciprocal benefits with the degree to which an individual considered that the sharing of knowledge would result in mutual benefits (McLure-Wasko and Faraj 2005; Hsu and Lin 2008). However, if the factor of the methods and techniques (see H5) is implemented whilst there is neglect of other motivational factors for KS, then that would result solely in reinforcement of existing behaviour (Davenport 1994). Clearly, tools and technologies may play a role that is significant in the support of KSB; however, proof has been provided in previous research that if methods and techniques are present, they are no guarantee of the desired KSB occurring (Ruggles 1998; McDermott 1999; Cross and Baird 2000; Orlikowski et al. 2016). At best, tools and technologies can be considered as reinforcement for other activities of knowledge sharing, whereas at their worst, tools and technologies may even discourage people from sharing their knowledge (Cross and Baird 2000). As such, in order to bridge the gaps within knowledge sharing behaviour, organisations should emphasise updating their methods and techniques.

The current study has consistency with the TPB (theory of planned behaviour) in the hypothesising of predictors of knowledge sharing intention as subject norms, attitude with regard to KS and perceived behavioural control. As hypothesised, the predictors of intention with regard to knowledge sharing that had significance were observed to be expected rewards, expected mutual relationships, self-confidence and apparent mutual benefits (attitude towards KS), perceived behavioural control (methods and techniques), the subjective norm (professional benefits) and the professional environment (as the subjective norm); the findings were consistent with other studies of the TPB (Bock and Kim 2002; Ryu et al. 2003; Bock et al. 2005; Lin and Lo 2015). Therefore, there was the hope that some gaps in the existing research could be filled by this study through the provision of insights from perspectives that are both theoretical/academic and methodological and through the testing of theories in a different context. Furthermore, the aim of the research has been to help in the development of strategies for the promotion of a culture of KSB within the University of Baghdad, thereby helping with potential improvements to intentions with regard to KS and to help in the meeting of the expectations in relation to the deliberate strategy of MOHESR. The following section outlines the implications that the research has and the potential contribution it has to the field of study.

7. Conclusions and Recommendations

Knowledge sharing is a key enabler for knowledge management. Systems of knowledge management are used by organisations for supporting knowledge sharing and leveraging the resources of knowledge; however, although knowledge management systems are clearly important, in practice there is no guarantee of the sharing of knowledge because technology is present. Since knowledge sharing is growing in significance for the success of knowledge management and the survival of organisations, academics have called for the identification of the factors that serve to promote or discourage knowledge sharing behaviours within a University of Baghdad context. This research study has been an exploratory one that has tried to fill a gap identified within the existing literature within the KS field by investigating those factors that impact upon knowledge sharing behaviour amongst academics. This study has drawn upon various streams of research, including studies made within the fields of social psychology and knowledge management, moreover, there was the development

of an integrated model of theory with three sets of critical factors shown from the theory of planned behaviour, i.e., perceived behavioural control, subjective norm and attitudes towards the sharing of knowledge, all of which were considered to influence knowledge sharing behaviour significantly.

Based upon the findings, this research study has recommendations of importance for managers at the University of Baghdad to consider. Cadres in the university ought to be trained and nurtured to have a fundamental readiness for KSB, with that readiness requiring creative abilities to optimise its best use. More seminars, workshops, training programmes and open meetings ought to be held frequently, so that expertise can be exchanged with workers in other sectors. University teaching needs to be undertaken within the English language so that the status of the university education within Iraq can be enhanced across the world and so that the further securing of scholarships and grants can be facilitated. Moreover, there should be utilisation of the creativity of the outstanding professors at the university by adopting a policy of expected rewards, such as promotion to more respected positions, establishment of suitable cash rewards, good packages for pay generally, opportunities for travel overseas for temporary work posts, attendance allowances for conferences and other opportunities to attend specialised courses of training. Those measures may help to increase the activity seen in academics, with individuals feeling that they are more valued for their work contributions and in receipt of more praise from the public.

A further thought is that there ought to be removal of the conventional, pyramidal structures of the organisation so that more flexible responses can be ensured in the face of the rapid changes to the environment in general. In addition, there can be the fostering of an exchange culture, wherein developmental authority is exercised for the securing of cultural agreements in league with equivalent colleges in the Arab world and within the West. So that the recognition of the university can be re-established, the management should be encouraged to increase its scholarships and the provision of more opportunities for study missions and research. There ought to also be encouragement for academics to capture a spirit of interchange, renewal and sharing of knowledge through the use of scientific criteria for the measurement of future and present levels of KSB. So that new developments can be acquired and the university on a par with prestigious universities across the world, there ought to be adoption of modern tools of assessment in relation to KSB amongst academics and the output of them. Further still, there ought to be upgrading and improvement to planning training programme effectiveness, so that the programmes have greater responsiveness for the future needs of the university. Furthermore, there ought to be the undertaking of an analytical study in relation to the sharing of knowledge within scientific departments, with evaluation of KSB levels through the use of modern tools of assessment so that strong and weak aspects may be highlighted and the opportunities and risks that each department faces are identified. Although seeking excellence and the introduction of the aforementioned proposals should be seen as types of investment as opposed to burdens on the budget of the university, there ought also to be provision of the appropriate means and tools so that successful adoption can be guaranteed.

The findings of this paper are specific to the higher education sector and cannot be directly applied to other sectors. To establish the robustness of these findings, further research should investigate the relationships in other private or public sectors in more depth. Additionally, it is crucial to acknowledge that cultural differences may introduce unique influences that cannot be easily generalized to other countries, as noted by Hofstede et al. (2010). To enhance the validity of the model, future studies could expand their scopes to encompass new cities, nations and cultures. However, it is important to consider that such expansion may yield unexpected results due to the potential variations in different contexts. By incorporating a broader perspective, the study can capture the diverse dynamics and nuances that exist across sectors and cultural settings.

By acknowledging these limitations, the study highlights the need for future research to explore the relationships in other sectors and cultural settings. Expanding the scope of the research to include new cities, nations and cultures would help enhance the validity

of the model. However, it is important to acknowledge that such expansion may yield unexpected results due to the inherent differences and dynamics in different contexts. Incorporating a broader perspective in future studies would capture the diverse dynamics and nuances that exist across sectors and cultural settings, leading to a more comprehensive understanding of the phenomena under investigation.

Engaging in open science practices, such as sharing and reusing scientific data, materials and code, is advocated by Allen and Mehler (2019) and Milham et al. (2018). These practices contribute to higher-quality scholarly output, enhance scientific literacy and foster trust in the scientific process, as highlighted by Tennant et al. (2016), Baker (2016), and Cook et al. (2018). The adoption of open science practices benefits individual researchers, the scientific community and society as a whole.

In line with the recommendations of Castaneda and Cuellar (2021), this study emphasises the importance of cultivating a knowledge sharing culture within organizations. It underscores the positive outcomes associated with such a culture, including improved communication, collaboration and critical thinking. The study also highlights the need for integrating information and communication technologies (ICTs) into pedagogical models, emphasising the significance of comprehensive training for professors to develop their digital skills. By prioritizing these aspects, organisations can create an environment that fosters knowledge sharing and leverages technology to enhance teaching and learning practices.

The findings of this study offer valuable insights and prompt several recommendations for future research. Although this study employed reliable and validated measures of knowledge sharing that were derived from previous studies, further investigation could enhance the robustness of the results. Future studies may consider expanding the number of items used to measure knowledge sharing and validating the constructs in different contexts or settings to strengthen the construction validity. Additionally, in line with Nonaka and Peltokorpi (2006) proposition that knowledge sharing can lead to competitive advantages, future research could explore the influence of knowledge sharing methods on various domains within the realm of open science. By investigating these areas, researchers can deepen their understanding of the broader implications and benefits of knowledge sharing practices, contributing to the advancement of knowledge management and open science initiatives.

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