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Stevan Dedijer
1911-2004

Expand the scope of competitive intelligence

In today's fast-paced business environment, having a strong understanding of the competitive landscape is more important than ever. As the old saying goes, "knowledge is power," and this is especially true when it comes to staying ahead of the competition.

Competitive intelligence is the process of gathering, analyzing, and disseminating information about the products, services, and strategies of a company's competitors in order to gain a strategic advantage. It involves studying the strengths and weaknesses of competitors, as well as trends and developments in the industry, in order to inform business decisions and strategies.

The scope of competitive intelligence is broad, and can include a wide range of activities and sources of information. Some common sources of competitive intelligence include public information, such as company websites, press releases, and industry reports, as well as private information, such as sales data, market research, and customer feedback.

This field is very dynamic, and the growing amount of information increases the opportunities that can be gained in shaping the environment in which organizations operate.

Competitive intelligence can also be a valuable tool in the development of a company's strategic plans and decision-making processes. By providing a comprehensive view of the market and the competition, competitive intelligence can help a company to make more informed decisions about where to allocate its resources and how to position itself for success.

Recent research shows that competitive intelligence is beginning to cover an ever wider range. The topics of scientific articles go beyond aspects of business and management.

The Web of Science Core Collection database provides the following insight into top 10 scientific fields that use competitive intelligence.

Source: Web of Science (14.12.2022)

In this issue, the authors propose to consider various aspects related to the work environment, e.g. Emotional intelligence, emotional labor, work stress and burnout.

From the point of view of business economics, the issue of fraud in the financial sector is relevant, the impact of which can be seen in different ways. The study was conducted to analyze the situation and identify approaches to reduce fraud.

A number of studies have been conducted on knowledge management as one of the ways to increase the level of work performance and support the entrepreneurial orientation of companies. By referring to the company's goal, customers, entrepreneurial orientation can modify and innovate according to the feedback obtained from them and thus gain more customers and profits.

Another study was conducted on the impact of information and communication technology on new product competitive advantage and new product vision through the partial mediating role of organizational learning capability.

Finally, studies have been conducted on different aspects of mobile application usage for better decision making and understanding of ICT behavioral approaches and business model innovations.

I would like to especially thank the authors for their contributions to this issue of JISIB.

On behalf of the Editorial Board,
Sincerely Yours,

Prof. Dr. Andrejs Cekuls
University of Latvia, Latvia
Editor-in-chief, JISIB

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Relationship between Emotional Intelligence, Emotional Labour, Job Stress and Burnout: Does coping strategy work?

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ABSTRACT This study seeks to examine the mediation effect of surface acting (SA), deep acting (DA), and job stress (JS) between emotional intelligence (EI) and burnout (BO) and also the sequential mediation of SA-JS and DA-JS between EI and burnout. It also deepens understanding of the moderating role played by mindfulness meditation (MM) as a coping strategy on the effect of JS on burnout. A cross-sectional plan was designed, whereby a survey was randomly used to obtain data from 338 medical personnel from private hospitals in Nigeria, and a partial least square structural equation modeling was used to test hypotheses contained in the heuristic model depicting the structural relationship between constructs. However, the discovery shows that JS is a significant mediator between EI and Burnout, and also there's a partial mediation of SA-JS and DA-JS between EI and burnout. Findings have it that MM significantly moderates the effect of JS on burnout and MM's inefficiency negatively impacts JS on Burnout. Hence, the heuristic model remains a cogent contributor to the body of knowledge and the moderating role of mindfulness meditation as a copying strategy, as well as conducting the study among medical personnel of privately-owned hospital in Nigeria health care sector.

KEYWORDS: Emotional intelligence, emotional labour, job stress, burnout, mindfulness meditation, health sector

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1. INTRODUCTION

Emotion has been part of our daily lives, most especially when it comes to handling negative and even positive feelings. Emotional Intelligence (EI) has been a very key factor in determining employees who can handle stress in the workplace and those who cannot. Meanwhile, EI could be either negative or positive, thereby necessary to maintain a moderating balance.

Extant literature opined on creating a considerate on how EI helps employees minimize Emotional Labour (EL), Job Stress JS, and Burnout in an organization. The study conducted by (Barchard, Brackett, & Mestre, 2016) as cited by (María Carmen, Cándido, Lucía, David, & José Manuel, 2019) shows there are two types of EI. At first, personality traits and what controls the stable ability to be able to identify and act in emotive situations such as optimism, motivation, and enthusiasm. Secondly, EI ability is mostly referred to as the use of emotions which enables individuals to adapt to their environment and situations, especially during decision making.

According to the study conducted by Jung and Yoon (2016), which shows that organizations that have employees with a high level of EI result in higher productivity and performance as a result of superfluous employee engagement. Meanwhile, Cho, Mohammad & Kim (2019), focused on the mediation effect of EL and JS on EI and burnout with the moderation effect of some coping strategies like direct action, social support, and Avoidant strategy. However, the study was limited to only the aforementioned coping strategy which warrants more study to be conducted using other forms of coping strategy as mindful mediation to serve as a moderator, also the study was restricted to only south Korean front-line employees of hotels. This warrants broader research to be conducted in a different environment and considering different job specifications to find a tote conclusion in regards to the subject matter, thereby the need for which this research is based.

Jung and Yoon (2016), reflected that employee with a high incidence of emotional intelligence tends to be more productive in an organization due to their ability to minimize EL, JS, and burnout. This means employees with lower EI will bring the effect of low productivity. Also (María Carmen, Cándido, Lucía, David, & José Manuel, 2019) with their view on EI as a trait in individuals, connotes that an employee can have the required skill set needed for a particular task, but having a lower level of EI, which brings about the need to balance the skills set with a good level of EI. Therefore, a study is necessitated to proffer a solution on how this can be managed using some coping strategies such as mindful meditation as a moderator to help employees cope with EL, JS, and burnout.

This paper discusses the relationship between EI and its effect on EL, JS, and ultimately burnout with the moderating factor of Mindful meditation in employees with a focus on the workforce population of some private hospitals in Nigerian. As studies have been conducted previously with restriction to only front-line employees, this is being replicated within the health sector, since staff from the hospital are expected and even demanded to show a happy and welcoming gesture irrespective of their inner feelings. Therefore, this research seeks to offer quantitative ripostes to the following questions:

a) Is there any positive effect of EI on employees' EL and JS?
b) Is EI only important for front-line employees or is it equally important to health workers?
c) Is there a moderating effect of Mindful Meditation on the nexus between JS and burnout?

Furthermore, intending findings will seek to show the level of importance of EI and how it affects employees' job stress magnitude, which will enable organizations to work towards training their employees on how to develop some level of EI. Again (Hyo & Yoon, 2016) studied "Why is employees' emotional intelligence important? The effects of EI on stress-coping styles and job satisfaction in the hospitality industry" concentrating only on hotel employees. Hafenbrack (2017), studied *"Mindfulness Meditation as an On-The-Spot Workplace Intervention"* emphasizing Mindfulness meditation as an immediate way of moderating an employee's EL and JS so as not to experience burnout and ultimately low productivity. Hence, this present study will harmonize diverse previous studies, and proceed further to cover the gap in the area of the health sector and within the African continent, especially focusing on Nigeria, which will give a different viewpoint on the pressing matter in extant literature due to different beliefs and cultures. The present study is being made to provide a broader thoughtfulness of EI, and its connection to EL, JS, and the effect of

burnout in employees. This study will seek to understand the upshot of EI on EL, JS, and its effect on burnout, and also the moderation role of Mindful meditation on the nexus between EL and burnout.

2. LITERATURE REVIEW

2.1 Conceptual Review

Emotional Intelligence (EI)

Emotional intelligence (EI) is defined as 'ones' ability to identify others' emotions and also to identify his/her own emotions, finding means of relating to others (Salovey & Meyer, 1990; Ji, Songshan & Pingping, 2019). This entails an individual's ability not only in recognizing his emotions but also that of others and make his/her emotions relate to others favorably, as there can be negative relationships and positive relationships.

Emotional Intelligence (EI) is basically of two concerns; the trait and the ability view (Barchard, et al., 2016; Maria et al., 2019). The emotional intelligence trait is responsible for an individual's personality which enables him/her to identify processes and action emotive situations such as enthusiasm, optimism, and motivation, while the ability EI is responsible for a personality's capability to solve problems and adapt to a new or changing environment. Hence, Sergio and Natalio (2017), view EI as an individual's capacity in dealing with shreds of evidence favorably and successfully.

Emotional Labour (EL)

Emotional Labour (EL) was outlined by (Morris and Feldman, 1996) as was being cited by (Nuran, Serpil, & Salih, 2012) that it's the hassle a personal make in designing and dominant his emotions to bring on organizations needed show of emotions within the individual's social relationship within the organization.) Ji, Songshan, and Pingping (2019) submit that workers will manage their feelings to own a positive show of facial and bodily expressions and this can be done principally to secure a grip or to aim for a decent wage. Also, (Ji, Songshan (Sam), & Pingping, 2019) cited (Diefendorff, Croyle, & Gosserand, 2005) that EL can be operational in three strategies of Surface Acting, Deep Acting, and, Genuine Acting.

Surface acting (SA) in line with Hochschild (1983) and Ji, Songshan, and Pingping (2019), assumes that employee adjusts his/her facial and bodily expressions in step with the principles of the organization once in an exceptional real sense, the individual's felt emotions don't seem to conform to the organization's performance rules required. According to Grandey (2000), Deep Acting (DA) occurs once an employee individual's felt emotions don't change to the organization's needed performance, and this warrants the individual using imagination, deep psychological thinking, and memory to suppress the negative emotions to expertise the organizations needed emotions.

Job Stress (JS)

Job stress is defined as a situation whereby the requirement of a job or task is more than the capabilities, resources, and needs of the worker (Chien-Wei, 2010). It is seen as the interface of work settings with workers' personalities changing usual psychological roles and triggering limits and negative effects. JS is a multi-faceted delinquent that incorporates an individual's features, the situation he/she finds him/herself in, as well as the organizational cultural condition (Farber, 1983). Hence, JS can be seen as the *"workers feeling of jib related hardness, tension, anxiety, frustration, and worry arising from his/her job"* (Cullen et al., 1985; Parker & DeCotiis, 1983; Xiachong et al., 2017). Summarily, factors relating to stress at work vary based on job nature, the exact stressor's kind, and the scope of the relationship between stress, and strain. Hence, variations thrive based on occupation type, and stressor diverges based on job level and type (Chien-Wei, 2010).

Burnout

Burnout as opined by (Grandey, 2000) is a situation where an employee experiences emotional exhaustion from a job due to the depletion of energy from an extensive task with a limited source of replenishing energy. Also (Grandey, 2000), opined that *"if an employee feels that meeting emotion demands at work requires a lot of effort and feels detached from customers then that employee may also feel a lowered sense of personal accomplishment".* This connotes that employees experiencing burnout can make the individual lose a sense of esteem and accomplishment which will result in lower productivity to the organization.

Burnout is categorized into three groups; "*emotional exhaustion or depletion of emotional resources, depersonalization or experienced distance from others, and diminished*

personal accomplishment or lack of confidence in one's ability to relate to others" (Carlson, Ferguson, Hunter & Whitten, 2012). Burnout is also a resultant outcome of employee exhibition of emotions of brained emotional energy once a worker is saddled with a responsibility of a significant task or employment with a high rate of repetition. The repetitive nature of the work will lead to the employee experiencing burnout which will result in the feeling of a low sense of accomplishment (Chiang & Liu, 2017). Hence, burnout is a direct effect of job stress, and they are very closely related as the former leads to the latter.

2.2 Conceptual Framework and Hypotheses Formulation

Emotional Intelligence (EI) and Emotional Labour (EL)

The study conducted by (Jung & Yoon, 2014) shows from the findings that an employee's Deep Acting (DA) which is part of Emotional Labour (EL) is affected by the employee's Use of Emotions (UOE), which is under Emotional Intelligence (EI), thereby establishing a link between EI and EL. Consequently, the hypothesis below was considered.

H1a → Emotional intelligence (Use of emotions) has a direct and positive effect on surface acting

H1b → Emotional intelligence (use of emotions) has a direct and positive effect on deep acting

H1c → Emotional intelligence (use of emotions) has a direct and negative effect on job stress

Emotional Intelligence (EI), Job Stress (JS), and Burnout

In the study conducted by (Lee & Ok, 2012) that employees who lack Emotional Intelligence (EI) usually suffer from consistent job stress which eventually leads to burnout in such employees. This is an indication that there's a link between EI and burnout through Job stress and also considering the connection between EI and EL (Jung & Kim, 2019).

Brotheridge and Grandey (2002) and Choi, Mohammad, and Kim (2019) consider EI as an influencer of employees' acting strategies; Deep Acting (DA) and Surface Acting, since observations were made on workers with higher EI regulating their emotional behavior if the need arises. This goes to show that there is a mediating effect of EL (DA & SA) on EI and burnout. Hence, the following hypotheses were developed.

H2a → Emotional intelligence has an indirect effect on job stress through surface acting

H2b → Emotional intelligence has an indirect effect on job stress through deep acting

H3a → Surface acting mediates the effect of emotional intelligence and burnout

H3b → Deep acting mediates the effect of emotional intelligence on burnout

H3c → Job stress mediates the effect of emotional intelligence on burnout

Mindfulness Meditation (MM) as a Moderator between Job stress (JS) and Burnout

Different scholars have shown the moderation roles coping strategies have played on job stress; and burnout. Among them are the contributions of various authors such as (Devereux et al., 2009) who observed from their study how social support moderates the relationship among perceived job demands, and burnout among workers with disabilities. A study conducted by (Wen et al., 2019) highlighted that social support and avoidant coping tend to increase stress in China rather than reduce it. Choi et al. (2019), concluded that social support and avoidant coping are both effective coping strategies in their study conducted in South Korea. Charoensukmongkol (2013), stated that Mindfulness mediation is when an employee observes an exercise of calmness by observing either his/her breathing and or walking step as a way of controlling stressful or negative emotions, and also stated that employees who adopt this coping strategy tend to focus more on problem-solving steps to cope with stress and enjoy more job satisfaction. Furthermore, Choi et al. (2019), stated that job stress in employees is a sign that the employees are about to experience burnout, and that to moderate or control this burnout, organizations should have a training and development program for their employees to teach them some coping strategies that will help them manage the job stress effectively. These coping strategies can be social support, direct action, avoidant coping, meditations, etc. considering the study focuses solely on Mindfulness meditation as a coping strategy as a moderator for his study, the following hypothesis was considered.

H4 → Mindful meditation moderates the effect of job stress on burnout

Tantamount to erstwhile discussions on extant literature, given below is the heuristic model for the study:

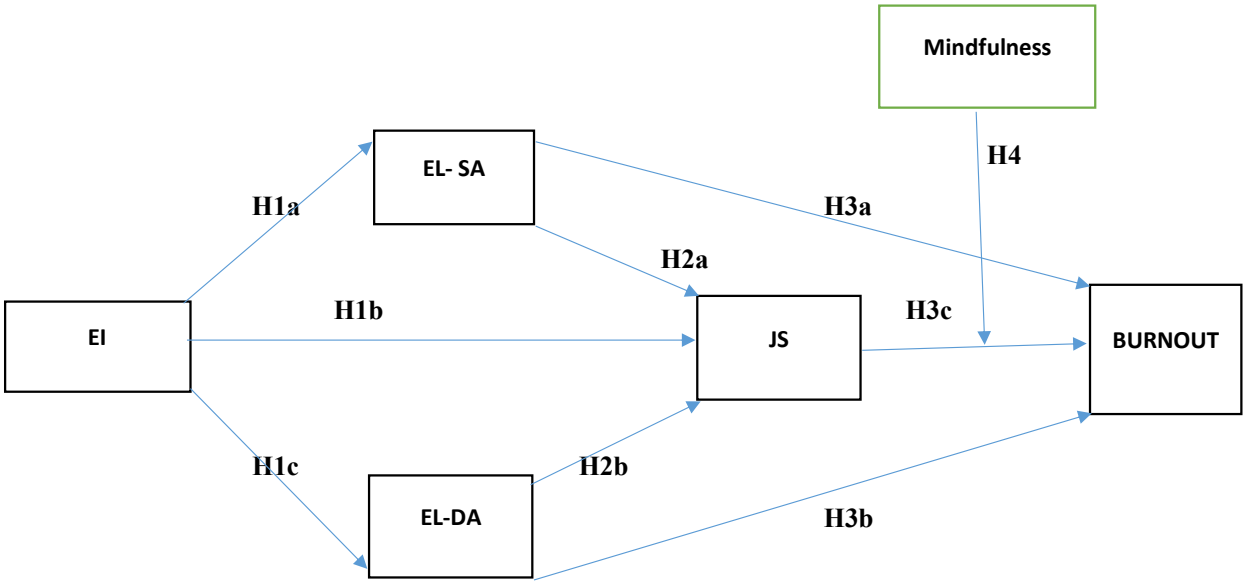

Figure 1 Research model.

EI: Emotional Intelligence; **EL-SA**: Emotional labor- Surface acting; **EL-DA**: Emotional labor- Deep acting; **JS**: Job stress

2.3 Theoretical Framework

In human resources management and social science in general, there are different theories propounded by different scholars in the field of general management and human resources supporting ideas about emotions. These theories sometimes may not explain or give an accurate understanding of the concept under study, but they can serve as a basis or foundation upon which a concept is built. This is because they give a rationale for the interpretation of a concept or an ideology.

In regards to this study, some theories were considered in understanding the relationship between EI, El, JS, and burnout. Conservation of Resources (COR) theory is a major theory anchoring the connection with the present study, was being espoused by Choi et al. (2019), which states that every employee pursues in protecting and conserving his/her resource and presumes any negative influence as a threat. In this regard, the mental, physical and emotional energy of such an employee is the energy the individual seeks to protect, which will, in turn, engage the employee in emotional labor as he/she seeks to protect his/her collective energy. Another theory that was adopted was the Emotional theory of Rationality (ETOR) (Garcés & Finkel, 2019). This theory suggests that emotions are the integral part of humans that allows the brain to function at its highest and best possible level. This further explains why individuals as employees will seek to conserve their emotional energy as explained in the COR theory.

3. METHODOLOGY

Participants and Measures

The study participants constituted a total of 2801 medical personnel from some private hospitals within six states in Nigeria, which were recorded to have the highest number of hospitals or medical centers within the nation. Ten private hospitals were randomly selected from each state, after which, five (5) staff were randomly selected to give a total of three hundred. Afterward, the sample size determined was doubled, to resolve the non-response problem, while reducing the sampling error (Hair et al. 2010). Finally, out of 600 surveys distributed within 4 months (February-May, 2021), 338 questionnaires were valid for the study, implying a 56.3% response rate.

A well-structured survey was designed in obtaining responses as adopted from the extant literature. Emotional labor was operationalized using a dimensional context from diverse previous studies conducted by Brotheridge & Grandey (2002), with three items each for surface acting and deep acting. Meanwhile, emotional intelligence was measured using five items from the study conducted by Chin-Shan & Szu-Yu (2016). Mindful meditation as a coping strategy was measured with three items from a study conducted by Irene, Therese, and Junvie (2019), while job stress was measured with three items (Jin, Sun, Jiang, Wang & Wen, 2017). Finally, burnout was measured using five items (Hu &Chen, 2010). Hence, a 5-point Likert scale was adopted to elicit responses.

Data Analysis

The analytical procedure deployed in this study comprises both Descriptive and Inferential statistics. SPSS was utilized in describing the sample population frame, in terms of frequencies and percentages, while correlation analysis was run to ascertain the nature of the relationship between variables, and the proposed structural model was subjected to strings of tests; psychometric and multi-collinearity, with confirmation by the Partial Least Square Structural Equation Modeling (PLS-SEM) using Smart PLS 3.0 version. Hence, significance level and their path coefficients were examined using the bootstrapping method.

4. RESULTS AND DISCUSSION

4.1 Findings

Descriptive statistics explored on respondents shows respondents' appropriateness for the study. The sample comprises three hundred and thirty-eight (338) workers from federal hospitals in Nigeria. Out of this sample, there were 66.6% females and 33.4% males in this sample. The average age of respondents was 36%, the majority falling within 30-39 years, while the least age fell within the range of 50 years and above. Respondent's educational qualification profile depicts 60.9% possessing a graduate degree, while the least response (9.2%) accounted for postgraduate studies. Meanwhile, the designation revealed that the majority interviewed were nurses, while an equal proportion (15.4%) came from Physicians and Therapists, and the least was for medical assistants. Hence, the demographic profile is presented below;

Correlational Analysis

The intercorrelations among the latent and observed variables; burnout, emotional intelligence, job stress, and emotional labour are shown in Table 2. Explicitly, UOE is positively connected to emotional labour (deep acting $r = 0.30$; surface acting $r = 0.28$, $p < .01$) and job stress ($r = 0.21$, $p < .01$), with a moderate and low correlation respectively. A moderate and positive relationship was found between SA ($r = 0.36$, $p < .01$), job stress ($r = 0.38$, $p < .01$) and burnout, while DA had a positive, but low correlation with burnout ($r = 0.29$, $p < .01$). Also, deep acting ($r = 0.71$, p .01), and surface acting ($r = 0.69$, p .01) are strongly and significantly connected to job stress.

Table 1 Distribution based on respondents' demographic profile.

Variables	Categories	Freq (n = 338)	Percentages
Gender	Male	113	33.4
	Female	225	66.6
Age	Below 30 years	70	20.7
	30–39 years	141	41.7
	40–49 years	98	29.0
	50 years & above	29	8.6
Education	High School	101	29.9
	Graduate	206	60.9
	Postgraduate	31	9.2
Designation	Physician	52	15.4
	Nurse	197	58.3
	Therapist	52	15.4
	Medical Assistants	37	10.9

Source: Author's survey and computation, 2021.

Table 2 Observed and latent variable correlation.

Variables	Mean	SD	BURN	DA	UOE	JS	MM	SA
Burnout	3.340	1.003	1	0.29**	0.45**	0.38**	0.03**	0.36**
Deep Acting	3.644	1.087		1	0.30**	0.71**	-0.00	0.77**
Emotional Intelligence (UOE)	3.567	0.835			1	0.21**	-0.03	0.28**
Job Stress	3.607	1.186				1	0.02	0.69**
Mindfulness Meditation	3.581	1.258					1	-0.02
Surface Acting	3.419	0.979						1

*Note. ** Correlation is significant at the .01 level, two-tailed; SD = Standard Deviation.*

Test of Hypotheses

The two-stage model of the Partial Least Squares (PLS) technique suggested by Andersen and Gerbing (1988), was used to assess both the structural model and the measurement model. The measurement model was tested using convergent validity. Hence, it measures the degree to which several items in an instrument assessing a single idea agree. Factor loading, average variance extracted (AVE), and composite reliability (CR), were all examined to determine the convergent validity. As suggested by Igbaria et al. (1995) and Lin & Wang (2012), all the items recorded outer loadings above 0.5 and for composite reliability and its sister metrics (Cronbach's alpha and rho A), all constructs

Table 3 Measurement Model.

Latent Variables	***Convergent validity***		**Internal consistency**				**Discriminant Validity**
	Indicators	***Loadings(λ)***	**CA**	**rho_A**	**CR**	**AVE**	**F-L**
EMOTIONAL LABOUR							
Surface Acting ***(SA)***			**0.808**	**0.811**	**0.886**	**0.722**	***0.850***
SA1	I resist expressing my true feelings	**0.849*** **					
SA2	I pretend to have emotions I don't have	**0.856*** **					
SA3	I hide my true feelings about a situation	**0.843*** **					
Deep Acting ***(DA)***			**0.819**	**0.820**	**0.892**	**0.735**	***0.857***
DA1	I make an effort to feel the emotions that I need to display to others	**0.870*** **					
DA2	I try to experience the emotions that I must show	**0.874*** **					
DA3	I try to feel the emotions I have to show as part of my job	**0.827*** **					
EMOTIONAL INTELLIGENCE			**0.878**	**0.891**	**0.910**	**0.669**	***0.818***
UOE1	I always encourage myself to try my best	**0.817*** **					
UOE2	I am a self-motivated person	**0.784*** **					
UOE3	I always set goals for myself and try my best to achieve them	**0.827*** **					
UOE4	I can always calm down quickly when I'm angry	**0.827*** **					
UOE5	I seek out activities that make me happy	**0.833*** **					
JOB STRESS (JS)			**0.862**	**0.862**	**0.906**	**0.708**	***0.841***
JS1	There are a lot of aspects of my job that makes me upset	**0.818*** **					
JS2	When I'm at work, I often feel tense and uptight	**0.823*** **					
JS3	I am usually under a lot of pressure when I am at work	**0.856*** **					
JS4	A lot of time my job makes me very frustrated or angry	**0.867*** **					
MINDFUL MEDITATION (MM)			**0.912**	**0.806**	**0.931**	**0.817**	***0.904***
MM1	How much value of mindfulness meditation do you see for yourself?	**0.948*** **					
MM2	How much do you feel this experience has enhanced your learning abilities?	**0.845*** **					
MM3	How likely are you to continue practicing mindfulness meditation?	**0.917*** **					
BURNOUT (BURN)			**0.827**	**0.835**	**0.884**	**0.657**	***0.810***
BURN1	I feel I treat some residents as if they were impersonal objects	**0.775*** **					
BURN2	I've become more callous towards people ever since I took this job	**0.842*** **					
BURN3	I worry that this job is hardening me emotionally	**0.800*** **					
BURN4	I don't care what happens to some recipients	**0.823*** **					

Source: Author's Computation, 2021.
Notes: **CA** = Cronbach's Alpha, **CR** = Composite Reliability, **rho** = rho_A reliability indices, **AVE** = Average Variance Extracted, **(F-L)** = *Italicized* values are the square root of AVE.

Table 4 Discriminant validity (Heterotrait-Monotrait Ratio criterion).

Variables	BURN	DA	UOE	JS	MM	SA
Burnout						
Deep Acting	0.349					
Emotional Intelligence	0.526	0.343				
Job Stress	0.444	0.840	0.235			
Mindfulness Meditation	0.042	0.029	0.045	0.031		
Surface Acting	0.422	0.842	0.319	0.817	0.058	

Source: Author's Computation, 2021.

return values greater than the 0.70 thresholds, which affirm that the item-construct structure in the measurement model has converged. Convergent validity is maintained, as demonstrated in prior investigations by all of the AVE values being over the 0.5 criteria (Olaleye et al., 2021a; 2021b, 2020; Fornell & Larcker, 1981). The findings are shown in Table 3 below:

Discriminant Validity

Discriminant validity, inter-construct correlation values, and the square root of AVEs for each construct were determined using Fornell-Larcker's approach (1981). Meanwhile, in table 3, the square root of all AVE is shown, while the inter-construct correlation is shown in table 2. Since the square root of AVE is larger than the inter-construct correlation of each construct, the measurement model is deemed acceptable. Criticisms of Fornell-(1981) Larcker's criteria, which is used to determine discriminant validity, have recently been made (Henseler et al., 2015). As an alternative, a Monte-Carlo simulation was used to demonstrate the superiority of the Heterotrait-Monotrait (HTMT) correlation ratio over the Fornell-(1981) Larcker's method. It is shown in Table 4 that utilizing the Heterotrait-Monotrait (HTMT) ratio to determine discriminant validity, the two-threshold proposed by Kline (2005) and Gold et al. Overall, HTMT values for all items fell below limits of less than 0.90, demonstrating a prevalence of discriminant validity among those constructs included in the model.

Structural Model

In addition to the measurement model, the structural model was evaluated in this study. Causation constructs in an instrument are often tested using the structural model uses bootstrapping of 5000 re-sampling procedures to estimate the path coefficient and the R-squared, as well as other statistics such as t-statistics, P-value, and f^2.

Direct and Indirect effects

Using the predictor variable's direct effects on the outcome variables, researchers discovered that emotional intelligence have a positive impact on emotional labour; surface acting (H_{1a}: $\beta = 0.279$, t = 5.378, $p < 0.05$); deep acting (H_{1b}: $\beta = 0.298$, t = 5.802, $p < 0.05$), but insignificant direct effect on job stress ($H_{1c:}$ $\beta = -0.017$, t = 0.646, $p > 0.05$).

Meanwhile, the indirect effect of emotional labor (surfaced acting and deep acting) on the relationship between emotional intelligence and job stress is said to be significant. (H_{2a}: $\beta = 0.098$, t = 3.857, $p < 0.05$; H_{2b}: $\beta = 0.131$, t = 4.753, $p < 0.05$). Hence, support is found for the hypothesized indirect path contained between EI and EI . According to Hypothesis 3, SA mediates the relationships of emotional intelligence and burnout, while deep acting and job stress could not play a mediating role between emotional intelligence and burnout. Thus, H_{3b} and H_{3c} are rejected.

Interaction Effect (Moderation)

Mindful meditation (MM) indirectly moderates the direct effect of job stress on burnout was significant but negatively (ß = -0.113, t = 2.045, p < 0.05). Furthermore, the moderation effect of MM is illustrated in figure 4, which shows a graph, showing how mindful meditation moderates the course. For each of these three MM values (-1 SD, mean, and +1 SD), the blue, red, and green lines show how MM affects the path. It becomes ostensible that high levels of MM involvement dampen the positive effect of job stress on burnout, while low levels of MM involvement strengthen the effect of job stress on burnout.

Sullivan and Feinn (2012), however, urge that the substantive significance (f^2) commonly referred to as the effect size, be reported in addition to the beta coefficient, statistical significance (p-value) and variance explained (R^2). Using Cohen's (1988) threshold of 0.02, 0.15, and 0.35 as a standard, they also advocate interpreting the amplitude of effects of small, medium, and large in magnitude, respectively. However, except for the EI path with a medium magnitude (value of F^2 is greater than 0.15 but below 0.35), all reported effect sizes were of small magnitude, falling below the 0.15 threshold.

Table 5 Path Analysis Result.

Relationship		***Model fit indices***	***NFI = 0.809***		***SRMR = 0.055***		**X^2 = 849.050**
Hypotheses	***β***	**Std. Error**	**t-value**	**p-value**	**F^2**	***R^2***	***Decision***
Direct Effects							
H1a: EI	0.279	0.052	5.378	0.000**	0.084	0.078	Supported
H1b: EI	0.298	0.051	5.802	0.000**	0.097	0.089	Supported
H1c: EI	-0.017	0.037	0.460	0.646	0.001	0.548	Not Supported
Indirect Effects							
H2a: EI	0.098	0.025	3.857	0.000**	0.112	0.548	Supported
H2b: EI	0.131	0.028	4.753	0.000**	0.171	0.548	Supported
H3a: EI	0.062	0.029	2.169	0.031**	0.022	0.179	Supported
H3b: EI	-0.020	0.025	0.828	0.408	0.002	0.179	Not Supported
H3c: EI	-0.004	0.009	0.469	0.639	0.038	0.179	Not Supported
Moderation Effect							
H4: MOD*JS	-0.113	0.055	2.045	0.041**	-	0.179	Supported

Source: Author's Computation, 2021.

***p < 0.05 (based on two-tailed test). **Significant at the p < 0.10 level (two-tailed).

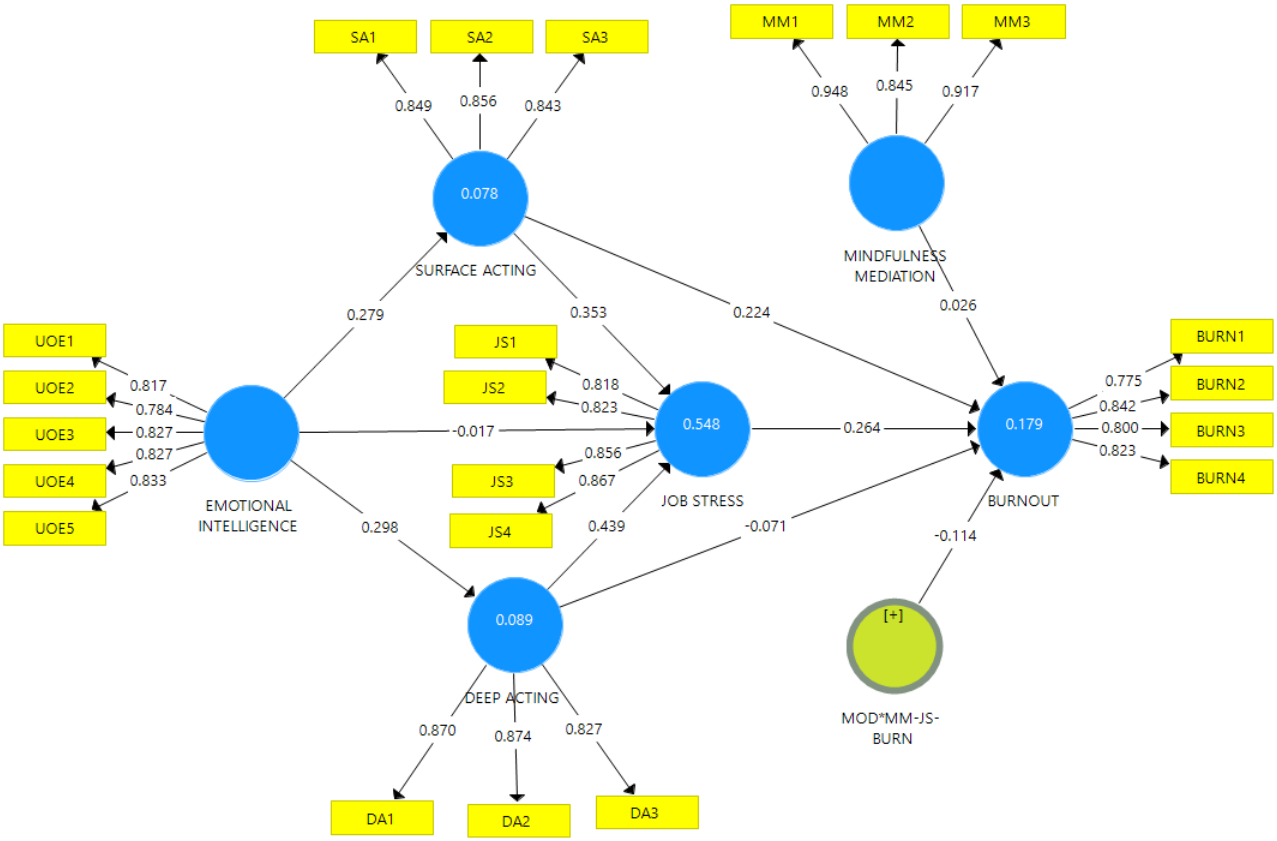

Figure 2 Path Analysis.

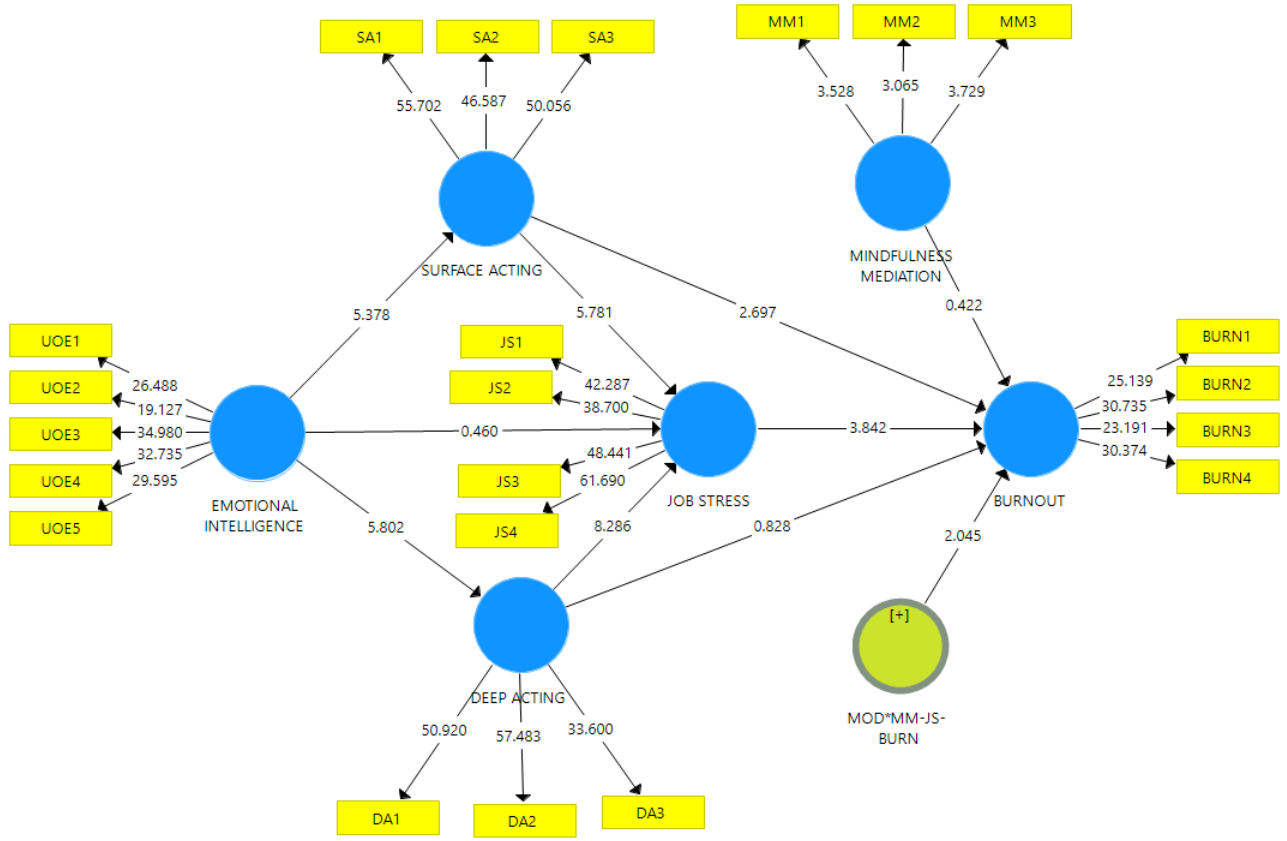

Figure 3 T-statistics.

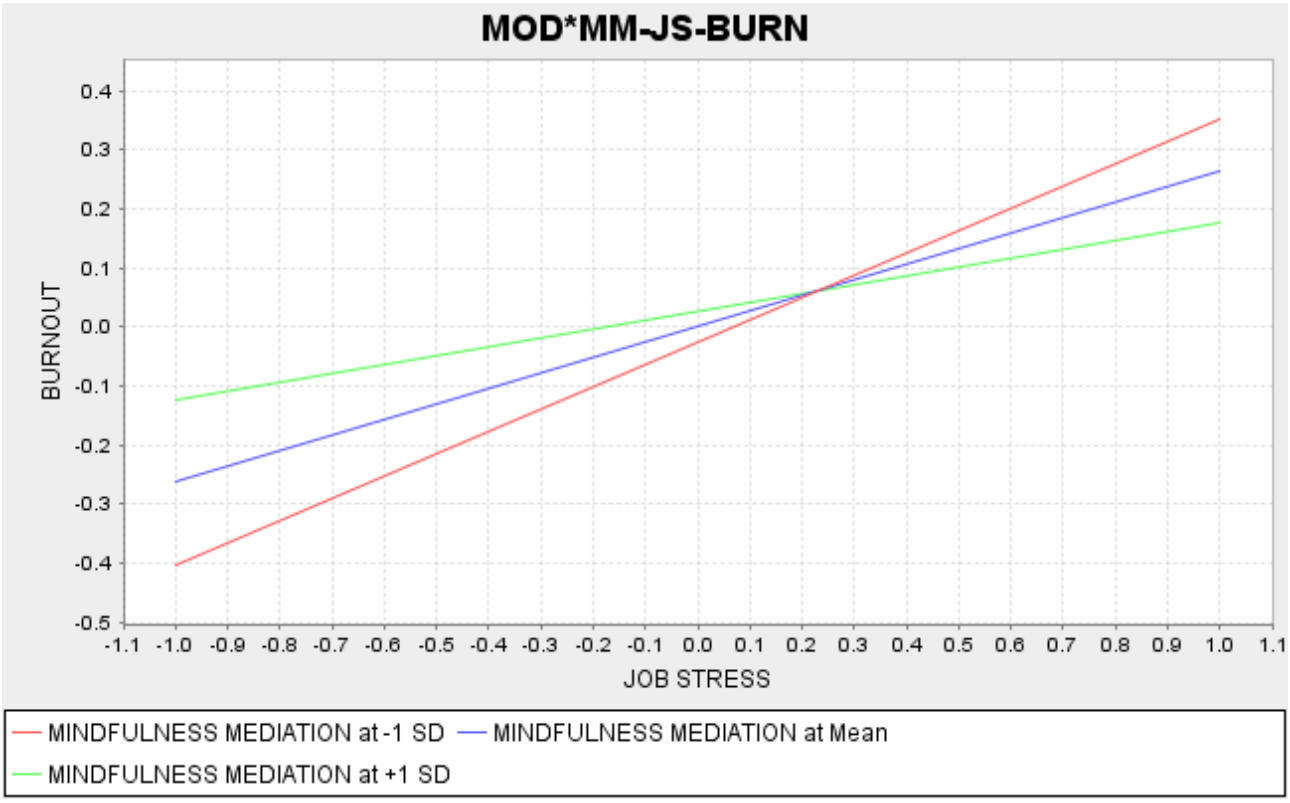

Figure 4 Moderating Effect of Mindfulness Meditation on the JS → BURN.

Finally, although not absolutely required to be reported in PLS-SEM, the model fit assessment was conducted, with the NFI (0.809), close to 1, and the SRMR value of 0.055, which falls below the threshold of 0.08, Hair Jr. et al. (2017), beneath which model fit is established. Thus, we can confirm that the model used in studying the underlying construct fits the data.

4.2 Discussion

The works of previous scholars have established the different relationships between EI-EL, EI-BO, EI-EL-BO, EI-EL-JS-BO, EI-EL-JS-BO with the moderation of Avoidant coping, Active coping, and social support as moderation variables. With all these previous studies focusing on restaurants or hotel settings. However, no previous study used Mindfulness meditations as a moderation variable and also with no consideration to the health sector. Therefore, this study focuses on the mediation of EL and JS on EI and BO with the moderation effect of Mindfulness mediation on the health sector using Nigerian hospitals as a case study.

Following the research work done by (Choi et al., 2019) on the mediation role JS plays between EL and Burnout, this study also showed the mediation role JS plays between EI, EL, and Burnout. As evidenced from the result, the effect of EI on Burnout is mediated by JS and also a sequential mediation of SA-JS and DA-JS, revealing that EL does not have a direct mediating effect between EI and Burnout without the sequential support of JS. This implies that without the effect of JS, both SA and DA do not result in burnout for the medical staff even though EI may impact a resulting SA and DA on the staff. This means over-exhibition of EI will result in EL i.e., both SA and DA but not Burnout, and a prolonged EL that transfers into JS can lead to Burnout among medical personnel.

In consideration of the previous study by (Choi et al., 2019) who took into consideration three different coping strategies to alleviate the effect of JS on burnout, i.e. they considered Direct Action, Active and Seeking social support. However, this study only focused on the moderation role of Mindfulness meditation on JS and Burnout as was supported by the works of (Zollars et al., 2019) as part of the strategies, medical staff employ to conserve their energy, as explained by the Conservation of resources theory (Choi et al., 2019). The results showed that when the staff used a high level of MM, it helps in moderating the effect of JS on burnout, contrarily, if they apply it at a lower level, it strengthens and increases the effect of JS on burnout.

5. CONCLUSION

The present study remains high cognizance as it explores various connections between EI, EL, JS, and Burnout and also tried to understand the moderation role MM plays in managing JS, of not resulting in burnout among healthcare medical personnel in an African setting like Nigeria. This will serve as a basis upon which scholars can investigate this phenomenon not only in Asian or European or American countries, but in an African setting, and previously studied focused in the hospitality industry, but with now focusing on health care setting; gaining a wide range of area for further research.

Practical and Managerial Implications

From the findings above, the researchers suggested some practical steps for the health care practitioners. Because health care work has a lot of emotional demand on the employees, managers need to bring up programs that will train employees on how to adopt and utilize various coping strategies in alleviating JS, not only MM but also other coping mechanisms that will help them cope with the high emotional, mental and physical demand of the job.

Secondly, managers need to ensure in-house interviews and reviews are conducted to understand the EI levels of their employees and to assign tasks that will be at a manageable level for such employees that are prone to JS. This is because especially as the lives of the patients are at stake and an exhausted employee is a danger to a patient. Thirdly, managers can support employees by encouraging them to have time for self-development on EI and also medical schools need to integrate the teaching of EI skills to students studying to be professionals in any medical field. Fourthly, managers should do well to monitor and observe employees who are exhibiting signs of JS and also advise employees to always speak up when they are experiencing JS so that immediate intervention can be made, as JS is a sign the employee will soon experience burnout which will impact negatively on the lives of patients, lastly, managers should also design rotations that will not be over tasking on the staff as that can help moderate the rate at which the employees will experience JS and or Burnout.

Limitations and Suggestions for Future Research

Despite all contributions from this study, limits such as a small number of hospitals were being sampled in Nigeria, therefore, the cultural factor and the limited data from the few hospitals may have an impact on the conclusion, and focus can also be made on replicating the study in other sectors or country or continent. Secondly, the research only focused on MM as the only coping strategy, therefore, future studies can be done integrating other forms of coping strategies like religious coping strategy, especially considering Nigeria is a religious country. This will further broaden the generalizability of the study. Further studies can investigate questions like how does EI affect EL? How can health care employees manage EL and the resulting JS? How effectively can they use MM so as not to underuse it and increase their chances of burnout? With these questions answered, contributions will emanate not only to the African healthcare sector but extend to other parts of the world. Lastly, the study is a cross-sectional design, with variables measured purely with a survey, future studies may broaden findings with a longitudinal study on a causal effect among variables for a long-range period of observation.

REFERENCES

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103(3), 411.*

Barchard, K. A., B. M., & Mestre, J. M. (2016). Taking Stock and Moving Forward: 25 Years of Emotional Intelligence Research. *International Society for Research on Emotions, Volume: 8 issue: 4, page(s): 289–289*, 4–7. doi:https://doi.org/10.1177/1754073916650562

Brotheridge, C. M., & Grandey, A. A. (2002). Emotional Labor and Burnout: Comparing Two Perspectives of "People Work". *Journal of Vocational Behavior*, 19–35.

Carlson, D., Ferguson, M., Hunter, E., & Whitten, D. (2012). Abusive supervision and work-family conflict: The path through emotional labor and burnout. *The Leadership Quarterly*, 1–11.

Chiang, C.-F., & Liu, B.-Z. (2017). Examining job stress and burnout of hotel room attendants: Internal marketing and organizational commitment as moderators. *Journal of Human Resources in Hospitality & Tourism*, 1–18.

Chien-Wei, C. (2010). Job stress, coping strategies, and burnout among hotel industry supervisors in Taiwan. *The International Journal of Human resource Management*, 15.

Chin-Shan, L., & Szu-Yu, K. (2016). The effect of job stress on self-reported safety behaviourin container terminal operations: The moderating roleof emotional intelligence. *Transportation Research Part*, 9–18 .

CULLEN, F. T., CLARK, G. A., CULLEN, J. B., & MATHERS, R. A. (1985). Attribution, Salience, and Attitudes toward Criminal Sanctioning. Criminal Justice and Be havior, 12(3), 305–331. https://doi.org/10.1177/0093854885012003003

Cohen, J. (1988), Statistical Power Analysis for the Behavioral Sciences, Lawrence Erlbaum Associates, Inc., Hillsdale, MI.

Devereux, J. M., H. ,., N. S., Firth, A., & Totsika, V. (2008). Social support and coping as mediators or moderators of the impact of work stressors on burnout in intellectual disability support staff. *Research in Developmental Disabilities*, p. 7 & 8. doi:10.1016/j.ridd.2008.07.002

Diefendorff, J. M., Croyle, M. H., & Gosserand, R. H. (2005). The dimensionality and antecedents of emotional labor strategies. *Journal of Vocational Behavior 66*, 1–3. Retrieved 12 16, 2019, from http://isiarticles.com/bundles/Article/pre/pdf/69853.pdf

Farber, B. A. (1983). The effects of psychotherapeutic practice upon psychotherapists. *Psychotherapy: Theory, Research & Practice, 20*(2), 174–182. https://doi.org/10.1037/h0088488

Fornell, C. & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. Journal of Marketing Research, 18: 39–50.

Grandey, A. A. (2000). Emotion Regulation in the Workplace: A New Way to Conceptualize Emotional Labor. *Journal of Occupational Health Psychology*, 1–16. Retrieved 12 16, 2019, from https://psycnet.apa.org/doiLanding?doi=10.1037%2F1076-8998.5.1.95

Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The qualitative report, 8(4), 597–606.*

Hair J. F., G. T. M. Hult, C. M., Ringle & M., Sarstedt (2017). A Primer on Partial Least Squares Structural Equation

Modeling (PLS-SEM), 2nd ed., Sage, Thousand Oaks, CA.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. Journal of the Academy of Marketing Science, 43 (1), 115–135.

Hafenbrack, A. C. (2017). Mindfulness Meditation as an On-The-Spot Workplace Intervention. *Journal of Business Research*, 1–12.

Hu, H.-H. '., & Cheng, C.-W. (2010). Job stress, coping strategies, and burnout among hotel industry supervisors in Taiwan. *The International Journal of Human resource Management*, 15.

Huang, S. (., Robert, v. d., & Song, Z. (2018). The impact of coping strategies on occupational stress and turnover intentions among hotel employees. *Journal of Hospitality Marketing & Management*, 11.

Hyo, S. J., & Yoon, H. Y. (2016, August 08). Why is employees' emotional intelligence important? The effects of EI on stress-coping styles and job satisfaction in the hospitality industry. *International Journal of Contemporary Hospitality Management, Vol. 28 No. 8, pp. 1649–1675*, 1–6. Retrieved from https://www.emerald.com/insight/content/doi/10.1108/IJCHM-10-2014-0509/full/html

Irene, Z., Therese I., P., & Junvie, P. (2019). Effects of mindfulness meditation on mindfulness, Igbaria, M., Iivari, J., & Maragahh, H. (1995). Why do individuals use computer technology? A Finnish case study. *Information & management, 29(5), 227–238.*mental wellbeing, and perceived stress. *Currents in Pharmacy Teaching and Learning*, 4.

Ji, W., Songshan (Sam), H., & Pingping, H. (2019). Emotional intelligence, emotional labor, perceived organizational support, and job satisfaction: A moderated mediation model. *International Journal of Hospitality Management*, 1–11.

Jin, X., Sun, I. Y., Jiang, S., Wang, Y., & Wen, S. (2017). The relationships between job and organizational characteristics and role and job stress among Chinese community correctional workers. *International Journal of Law, Crime, and Justice*, 7.

Jung, H., & Yoon, H. (2014). The moderating role of hotel employees' gender and job position on the relationship between emotional intelligence and emotional labor. *International Journal of Hospitality Management*, P2. doi:http://dx.doi.org/10.1016/j.ijhm.2014.08.003

Kline, R. B. (2005). Principles and Practice of Structural Equation Modeling. Fourth Edition, The Guilford Press, New York London.

Kim, H. J. (2008). Hotel service providers' emotional labor: The antecedents and effects on burnout. *International Journal of Hospitality Manage*, 1–11.

Lee, J. (., & Ok, C. (2012). Reducing burnout and enhancing job satisfaction: Critical role of hotel employees' emotional intelligence and emotional labor. *International Journal of Hospitality Management*, p 3. doi: 10.1016/j.ijhm.2012.01.007

Lin, W. S. & Wang, C.H. (2012). Antecedences to continued intentions of adopting e-learning system in blended learning instruction: A contingency framework based on models of information system success and task-technology fit. *Computers & Education,* 58(1), 88–99.

Levi, L., Sauter, S. L., & Shimomitsu, T. (1999). Work-related stress – it's time to act. *Journal of Occupational Health Psychology, 4*(4), 394–396. https://doi.org/10.1037/1076-8998.4.4.394

María Carmen, M.-M., Cándido, J. I., Lucía, G., David, A., & José Manuel, G.-F. (2019). Trait emotional intelligence profiles, burnout, anxiety, depression, and stress in secondary education teachers. *Personality and Individual Differences*, 1–9. Retrieved from https://www.sciencedirect.com/science/article/abs/pii/S0191886919300480

Morris, J. A., & Feldman, D. C. (1996). The dimensions, antecedents, and consequences of emotional labor. *The Academy of Management Review, 21*(4), 986–1010. https://doi.org/10.2307/259161

Maslach, C. (1982). Burnout: The Cost of Caring. Englewood Cliffs, NJ: Prentice-Hall.

Nuran, B., Serpil, A., & Salih, D. (2012). Emotional Labor and Burnout at Work: A Study from Turkey. *International Congress on Interdisciplinary Business and Social Science*, 1–6.

Parker, D. F., & DeCotiis, T. A. (1983). Organizational determinants of job stress. Organizational Behavior and Human Performance, 32, 160–177. http://dx.doi.org/10.1016/0030-5073(83)90145-9

Olaleye, B. R., M. Akkaya, O. L. Emeagwali, R. I. Awwadd & S. Hamdane (2020) Strategic Thinking and Innovation Performance; The Mediating Role of Absorptive Capabilities. Revista Argentina de Clínica Psicológica, 29(5), 2030–2043.

Olaleye, B. R., Adeyeye, O. P., Efuntade, A., Arije, B. S. and O., Anifowose (2021a). E-Quality Services: A Paradigm Shift for Consumer Satisfaction and E-Loyalty; Evidence from Postgraduate Students in Nigeria. Management Science Letters, 11(3), 849–860.

Olaleye, B., Anifowose, O., Efuntade, A and Arije, B. (2021b). The Role of Innovation and Strategic Agility on Firms' Resilience: A Case Study of Tertiary Institutions in Nigeria. Management Science Letters, 11(1), 297–304.

Salovey, P., & Mayer, J. D. (1990). Emotional Intelligence. Imagination, Cognition and Personality, 9(3), 185–211. https://doi.org/10.2190/DUGG-P24E-52WK-6CDG

Sergio, M.-L., & Natalio, E. (2017). Emotional intelligence and teacher burnout: A systematic review. *International Journal of Educational Research*, 1–10. Retrieved 12–16, 2019, from https://www.sciencedirect.com/science/article/pii/S0883035517304214

Sullivan, G. M., & Feinn, R. (2012). Using Effect Size-or Why the P-Value Is Not Enough. Journal of graduate medical education, 4(3), 279–282.

Xiaohong, J., Ivan Y., S., Shanhe, J., Yongchun, W., & Wen, S. (2017). The relationships between job and organizational characteristics and role and job stress among Chinese community correctional workers. *International Journal of Law, Crime, and Justice*, 1–11.

Yina, H., Huanga, S., & Chen, G. (2019). The relationships between teachers' emotional labor and their burnout and satisfaction: A meta-analytic review. *Educational Research Review*, 1–18.

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The mediating effect of entrepreneurial orientation on the impact of knowledge management processes on successful organizational performance at industrial sector in Jordan

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ABSTRACT The study aimed to identify the mediating effect of entrepreneurial orientation on the impact of knowledge management processes on successful organizational performance at industrial sector in Jordan. A quantitative questionnaire survey is conducted. The study population consisted of all senior and middle administrations and employees in the pharmaceutical industry companies in Jordan. The study sample consisted of (150) senior and middle administrations, and (250) employees. The study sample was selected by random stratified method. The results revealed that There is an impact of knowledge management on the Organizational performance at ($\alpha \leq 0.05$) in the pharmaceutical industry companies in Jordan. Furthermore, there is an impact of knowledge management on the Entrepreneurial Orientation at ($\alpha \leq 0.05$) in the pharmaceutical industry companies in Jordan. Our research mainly contributes to suggesting a new mechanism for applying knowledge management and leadership, which has been turned into a tool for improving organizational performance in the company and delivering a high quality product. This new mechanism contains five steps that managers and employees can apply.

KEYWORDS: Entrepreneurial Orientation; Knowledge Management Processes; Organizational Performance; Industrial Sector

1. INTRODUCTION

Knowledge management is one of the tools that contribute to increasing speed and improving performance (Allameh & Zare, 2011; Khan et al., 2021). As knowledge is a major robust source of funding within institutions (Claver-Cortés et al., 2007), so Companies and institutions must pursuit of having knowledge in order to develop their production (Zaim et al., 2019). Knowledge management constitutes a set of interrelated and connected procedure that work within the organization in order to find, process and develop knowledge to be later used in the best way for the interest of the organization and the different administrative sectors within (Daud, S., & Yusuf, 2008; Alghail et al., 2021).

Schmitz et al., (2014) believes that, knowledge management has taken a great deal of interest and has become an important part within any company's production operations and processes (Yusr et al., 2017). According to business scope, knowledge management has been considered as a distinctive mark for the most effective institutions from a strategic point of view (Areed at al., 2021). The dynamic environment within the institutions provides

its employees with support and motivate them to be more productive and active (Al Shraah et al., 2021).

Given the importance of knowledge management, many researchers have analyzed it from different points of view. Schmitz et al. (2014) delved into the study of the impact of knowledge management with its various aspects and relationship with the organization Allameh & Zare (2011) studied the impact of knowledge management on corporate sustainability and found significant and positive results.

The successful key for the Companies is providing support and attention to their employees (Anwar & Abdullah, 2021; Shanker et al., 2017). The commitment of senior management and staff discipline is very important at this stage (Hamza et al., 2021; Pang & Lu, 2018). Senior management facilitates a culture of learning and knowledge management in the organization (George et al., 2019). Serrat (2017) argues that knowledge-oriented leadership is the most important part because it can lead the company towards excellence and development.

Entrepreneurship orientation is considered one of the basic and successful methods in knowledge management and organization, and it is widely applied because of benefits in raising the level of companies and their employees achievement. (Tajeddini et al., 2020; Corrêa et al., 2021). Various definitions of entrepreneurial orientation are available in the literature. Entrepreneurial orientation executives are crafting strategies in the hopes of doing something new and exploiting opportunities that other organizations cannot exploit. (Wales et al., 2019; Arzubiaga et al., 2018). The entrepreneurial orientation organizes plans, ideas and workers within the company in order to creates beneficial job opportunities for the sake of the company itself as well as the customers. (Genc et al., 2019; Jiang et al., 2018).

This paper includes three sections; it begins with a review of the current literature on knowledge management processes, organizational performance, and entrepreneurial orientation, followed by defining the research model and hypotheses. Finally, it ends with the results and conclusion, as it will add a contribution to industrial companies from the perspective of the capabilities of knowledge management and what it reflects positively on improving organizational management, and increasing the company's entrepreneurial orientation.

2. LITERATURE REVIEW

2.2 Knowledge management

Entrepreneurial orientation refers to the organization's adoption of the concepts of initiative and innovation, and risk tolerance, as a strategic approach based on experimenting with innovative ideas and diversity in the use of modern management strategies (McKenny et al., 2018). Thus, the entrepreneurial orientation leads organizational performance towards excellence (Monteiro et al., 2019). The entrepreneurial orientation reflects the organization's ability to achieve compatibility and efficiency with business requirements and adapt to changes in the labor market (Ključnikov et al., 2019)The rapid changes and transformations witnessed in recent years in all areas surrounding business organizations at the economical, scientific, technological, social, political, legal and cultural levels have exacerbated the intensity of competition between the industrial organizations (Wales et al., 2020).Whereas Entrepreneurial orientation helps industrial establishments to implement entrepreneurial strategies that create prosperity (Zhai et al., 2018). The entrepreneurial orientation is divided into six elements (identifying opportunities, growth, creativity, adopting risk, flexibility, and vision (Alshanty & Emeagwali, 2019).

Knowledge is the essential organizational resource for companies in the twenty-first century, which can achieve a sustainable competitive advantage in the long term. Many studies have focused on the importance of knowledge management (Webb, 2017). Knowledge management processes have become one of the international trends of entrepreneurship, as knowledge management forms part of the organization's assets that lead it towards better performance, through obtaining, storing, sharing, and processing information in order to enhance its strategy, and providing the necessary information so that members of the organization make the right decisions (Abubakar et al., 2019).

To achieve better corporate performance, entrepreneurs need to use knowledge management to improve the quality of their decision-making (Zhang & Venkatesh, 2017). Knowledge management is also dynamic and multidimensional, covering most aspects of corporate knowledge activities, including knowledge creation, knowledge accumulation and knowledge exchange (Anwar & Ghafoor, 2017).

Knowledge management can be defined as the various administrative processes that a company devote to the production, distribution and use of knowledge to enhance organizational performance through knowledge acquisition, sharing and application (Durst & Zieba, 2019). Knowledge management can also be defined as the pursuit of knowledge in all its explicit and implicit forms, documenting and sharing it with all stakeholders in the company, and applying it in a way that guarantees the organization's advancement and progress (Abualoush et al., 2018).

Knowledge management is one of the most important requirements that any company or institution needs to ensure its progress and its development in light of the tremendous technological progress witnessed by the business sector in the current era (Ali & Anwar, 2021). Where companies, especially industrial ones, are interested in investing in the knowledge management projects and applying them to achieve success and continuity in the labor market (Al-Ahbabi et al., 2017). As companies have become more interested in knowledge management, as a result of the huge developments and changes on the one hand, and the increasing intensity of competition, and the multiplicity of requirements and needs of the customers on the other hand (Barley et al., 2018).

Knowledge management has become the focus of companies' attention through their reliance on information and knowledge and their use in designing and developing services (Othman et al., 2019), and technologies in order to renew their methods of providing services efficiently and quickly to customers compared to their competitors from other companies (Bolisani & Bratianu, 2017).

Knowledge management helps the industrial sector to take decisions at all administrative levels within the company, which leads to increase better competitiveness (Gopinath, 2021). It also helps to increase the stock of knowledge owned by the company, which leads to enhancing the capabilities of employees in their field of work, which is reflected positively on their performance (Gacanin, 2019). The knowledge management also contributes to identifying and understanding all the knowledge available in the company, which facilitates the process of investing it in an optimal manner and building a future vision based on it. Knowledge management also helps to consolidate the concept of knowledge culture within the minds of all employees, by encouraging behaviors of discovery and sharing of knowledge (Abdi et al., 2018).

2.3 Organizational performance

Organizational performance is one of the most important foundations upon which organizations and companies are built, and organizational performance expresses the features of the organization that distinguish it from other companies and organizations in the labor market (Al Khajeh, 2018). Organizational performance represents the values and principles prevailing in the organization's internal work environment, which regulate work strategies, ideas and visions that help develop the organization and ensure its continuity (Schneider et al., 2018).

Organizational performance also helps to develop the capabilities of all employees in the organization, increases their loyalty, and enhances interdependence among them. Successful organizational performance gives the organization a competitive advantage that helps attract both customers and qualified employees, and helps the administrative staff to make decisions that will develop the organization and increase its productivity. Organizational performance is a major component of the components and foundations of modern organizations, as it is seen as one of the entrances to change, improvement and development (Khalid et al., 2019).

The identification of organizational performance helps in revealing the extent of the organization's ability to confront environmental determinants and identify the organization's goals and resources (Mbaidin, 2021). Organizational performance is a reflection of how the organization uses its available financial and human resources and invests them in a way that makes it able to achieve its goals (Alghamdi, 2018). The organizational performance is the sum of all the operations carried out by the organization and all the strategies and plans it follows in order to increase its competitiveness in the labor market (Al Khajeh, 2018).

Organizational performance can be defined as defining interests, improving basic processes, appropriate allocation of human, material, financial and information resources, and effective management capable of developing clear, understandable and well-known strategies for employees (Abubakar et al., 2019). Organizational performance can also be

defined as the organization's use of its financial, human resources, and the exploitation of these resources in a way that gives it the ability to achieve the desired goals or that it seeks to achieve (Muthuveloo et al., 2017).

The effective performance of the organization is achieved through its ability to manage its internal capabilities, which gives it the ability to adapt to the surrounding environmental changes in order to innovate and renew in a way that meets the changing needs of customers and achieves its goals and objectives (Andrew, 2017). Where organizational performance helps to develop human capital, increase profits, sales growth, market share, productivity, and liquidity ratio (Anwar & Abdullah, 2021).

The importance of organizational performance revolves around increasing the profits of the organization, without which the organization will not be able to grow and develop in its field of business, and urging all employees of the organization to invent new marketing and creative methods that contribute to the development or discovery of new products or entering new markets (George et al., 2019). Organizational performance also helps to increase administrative productivity rates and administrative capabilities towards achieving outstanding performance (WANASIDA et al., 2021).

3. RESEARCH METHODOLOGY

3.1 The Research Method

In order to analyse the mediating effect of entrepreneurial orientation on the impact of knowledge management processes on successful organizational performance at industrial sector in Jordan the quantitative approach was used as it fits the purpose of the study. Quantitative approach is concerned with the gathering and examination of information in numeric shape from the chosen sample.

3.2 The Research Hypothesis

The hypotheses can be presented as follows:

First Hypothesis (H_{01}). There is no impact of knowledge management and its variables (Knowledge acquisition, Knowledge storage, Knowledge sharing, Knowledge application) on the Organizational performance and its variables (Performance of Employees, Commitment to quality standards) at ($\alpha \leq 0.05$) in the pharmaceutical industry companies in Jordan.

Second Hypothesis (H_{02}). There is no impact of knowledge management and its variables (Knowledge acquisition, Knowledge storage, Knowledge sharing, Knowledge application) on the Entrepreneurial Orientation

2.4 Conceptual Framework

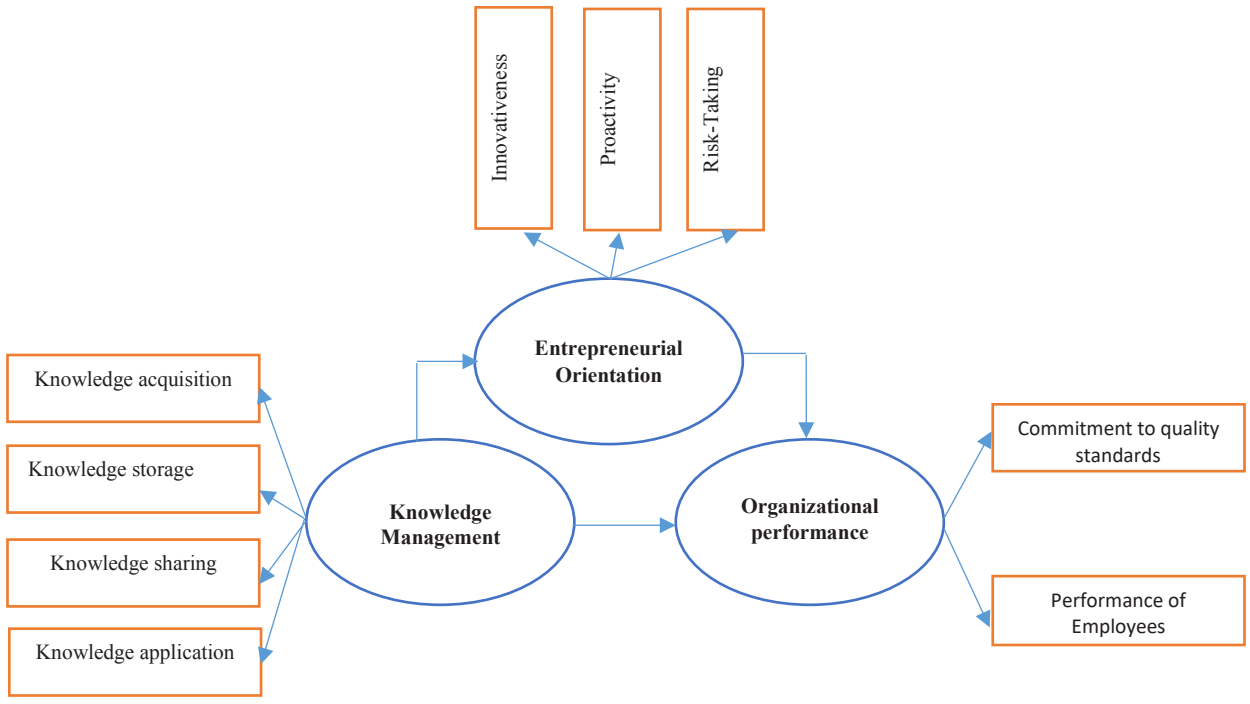

Figure 1 Conceptual Framework.

and its variables (Innovativeness, Proactivity, Risk-Taking) at ($\alpha \leq 0.05$) in the pharmaceutical industry companies in Jordan.

Third Hypothesis (H_{03}). There is no impact of Entrepreneurial Orientation and its variables (Innovativeness, Proactivity, and Risk-Taking) on the Organizational performance and its variables (Performance of Employees, Commitment to quality standards) at ($\alpha \leq 0.05$) in the pharmaceutical industry companies in Jordan.

Forth Hypothesis (H_{04}). There is no impact of knowledge management and its variables (Knowledge acquisition, Knowledge storage, Knowledge sharing, Knowledge application) on the Organizational performance and its variables (Performance of Employees, Commitment to quality standards) in the presence of Entrepreneurial Orientation as a mediating variable at ($\alpha \leq 0.05$) in the pharmaceutical industry companies in Jordan

3.3 The Research Instrument

The tool contains (36) items which the questionnaire was distributed by hand.

Questionnaire contains (4) demographic variables and (36) items represent study variables.

3.4 Data Analysis and Interpretation

To examine the mediating effect of entrepreneurial orientation on the impact of knowledge management processes on successful organizational performance at industrial sector in Jordan. Statistical Package for Social Sciences (SPSS) in processing the following statistical techniques and tests in data analysis:

1. Reliability Test
2. Frequencies and percentages
3. Descriptive Statistical Techniques
4. Multiple Regression
5. Structural Equational Model (SEM)

Table 1 Demographic characteristics for the study sample.

Demographic	Groups	Sample	
		Frequency	Percentage
Gender	Male	321	80.2
	Female	79	19.8
	Total	400	100%
Academic Level	Bachelor's Degree	300	75.0
	Master's Degree	81	20.2
	Doctorate Degree	19	4.8
	Total	400	100.0%
Years of Experience	Less than 1 year	9	2.3
	1–3 years	9	2.3
	0–5 years	57	14.3
	More than 5 years	325	81.1
	Total	400	100.0%
Job Position	Administration	150	37.5
	Employee	250	62.5
	Total	400	100.0%

Table 2 Cronbach's alpha for the study fields.

Field number	Field	Value of (α)
	Independent Variables: Knowledge Management	
F1-1	Knowledge acquisition	0.841
F1-2	Knowledge storage	0.909
F1-3	Knowledge sharing	0.824
F1-4	Knowledge application	0.784
	Dependent Variable: Organizational performance	
F2-1	Commitment to quality standards	0.859
F2-2	Performance of Employees	0.742
	Mediating Variable: Entrepreneurial Orientation	
F3-1	Innovativeness	0.838
F3-2	Proactivity	0.856
F3-3	Risk-Taking	0.873

As shown from the table above that the total Cronbach's alpha for the study fields was above than (0.60) which will lead to the stability of the results for this study.

3.5 Study Sample

The study population consisted of all senior and middle administrations and employees in the pharmaceutical industry companies in Jordan. The study sample consisted of (150) senior and middle administrations, and (250) employees. The study sample was selected by random stratified method. As it is classified into its demographic characteristics in the tables below:

3.6 Validity and reliability of the instruments

After preparing the questionnaire in its initial form, it was presented to a group of experts specialized in business administration in Jordanian universities, and they were asked to express their opinion on the appropriateness of the paragraphs of the tool and the subject of the study, and to ensure the linguistic formulation of the test questions, and the clarity of the test instructions. Based on the opinions of the experts, some amendments were made, and some vocabulary was checked. After taking the opinions of experts, the questionnaire was modified based on their observations, and the questionnaire had an appropriate degree of apparent honesty.

To reach a degree of reliability of the test, the researcher used Reliability test for the instruments of measurement the reliability of a measure highlights the stability of consistency with which the instrument is measuring the concept and helps to assess the 'goodness' of a measure, in order to compare if the students achieve stability.

3.7 Study Results

First Hypothesis (H_{01}). There is no impact of knowledge management and its variables (Knowledge acquisition, Knowledge storage, Knowledge sharing, Knowledge application) on the Organizational performance and its variables (Performance of Employees, Commitment to quality standards) at ($\alpha \leq 0.05$) in the pharmaceutical industry companies in Jordan.

To test this hypothesis, the researcher uses the multiple regression analysis. As shown in Table (3).

Table (3) clarify that there is significant impact of knowledge management and its variables on the Organizational performance in pharmaceutical industry companies in Jordan. The significant value was (0.000) less than (0.05). The value of R is the square root of R-Squared and is the correlation between the observed and predicted values of dependent variable was (0.651). The coefficient of determination R^2 (0.424) thus, about 42.4% of the variation in Organizational performance explained by knowledge management and its variables in pharmaceutical industry companies in Jordan. Restriction Parameter (F) was (72.785) of the Organizational performance in pharmaceutical industry companies in Jordan will be caused from for knowledge management specially (Knowledge Sharing and Knowledge Application).

Second Hypothesis (H_{02}). There is no impact of knowledge management and its variables (Knowledge acquisition, Knowledge storage, Knowledge sharing, Knowledge application) on the Entrepreneurial Orientation and its variables (Innovativeness, Proactivity, Risk-Taking) at ($\alpha \leq 0.05$) in the pharmaceutical industry companies in Jordan.

To test this hypothesis, the researcher uses the multiple regression analysis. As shown in Table (3).

Table (3) demonstrate that there is significant impact of knowledge management and its variables on the entrepreneurial orientation in pharmaceutical industry companies in Jordan. The significant value was (0.000) less than (0.05). The value of R is the square root

Table 3 Multiple Regression test to check the direct effect knowledge management and its variables (Knowledge acquisition, Knowledge storage, Knowledge sharing, Knowledge application) on the Organizational performance in pharmaceutical industry companies in Jordan.

Dependent Variable	(R)	(R^2)	F Calculate	DF	Sig*	B		T Calculate	Sig*
Organizational performance	0.651	0.424	72.785	4 395 399	0.000	**Knowledge Acquisition**	.098	1.815	.070
						Knowledge Storage	.049	.612	.541
						Knowledge Sharing	.233	3.009	.003
						Knowledge Application	.857	8.832	.000

* impact is significant at level ($\alpha \leq 0.05$).

Table 4 Multiple Regression test to check the direct effect knowledge management and its variables (Knowledge acquisition, Knowledge storage, Knowledge sharing, Knowledge application) on the entrepreneurial orientation in pharmaceutical industry companies in Jordan.

Dependent Variable	(R)	(R^2)	F Calculate	DF	Sig*	B		T Calculate	Sig*
Entrepreneurial Orientation	0.638	0.407	67.816	4 395 399	0.000	**Knowledge Acquisition**	.060	1.094	.275
						Knowledge Storage	.080	.989	.323
						Knowledge Sharing	.059	.751	.453
						Knowledge Application	.867	8.859	.000

* impact is significant at level ($\alpha \leq 0.05$).

Table 5 Multiple Regression test to check the direct effect Entrepreneurial orientation and its variables (Innovativeness, Proactivity, and Risk-Taking) on the Organizational performance in pharmaceutical industry companies in Jordan.

Dependent Variable	(R)	(R^2)	F Calculate	DF	Sig*	B		T Calculate	Sig*
Organizational performance	0.937	0.879	955.622	3 396 399	0.000	**Innovativeness**	.404	7.934	.000
						Proactivity	.587	8.950	.000
						Risk-Taking	.061	1.496	.135

* impact is significant at level ($\alpha \leq 0.05$).

of R-Squared and is the correlation between the observed and predicted values of dependent variable was (0.638). The coefficient of determination R^2 (0.407) consequently, about 40.7% of the variation in entrepreneurial orientation explained by knowledge management and its variables in pharmaceutical industry companies in Jordan. Restriction Parameter (F) was (67.816) of the entrepreneurial orientation in pharmaceutical industry companies in Jordan will be caused from for knowledge management specially (Knowledge Application).

Third Hypothesis (H_{03}). There is no impact of Entrepreneurial Orientation and its variables (Innovativeness, Proactivity, and Risk-Taking) on the Organizational performance and its variables (Performance of Employees, Commitment to quality standards) at ($\alpha \leq 0.05$) in the pharmaceutical industry companies in Jordan.

To test this hypothesis, the researcher uses the multiple regression analysis. As shown in Table (5).

Table (3) explain that there is significant impact of Entrepreneurial orientation and its variables on the Organizational performance in pharmaceutical industry companies in Jordan. The significant value was (0.000) less than (0.05). The value of R is the square root of R-Squared and is the correlation between the observed and predicted values of dependent variable was (0.937). The coefficient of determination R^2 (0.879) therefore, about 87.9% of the variation in Organizational performance explained by Entrepreneurial orientation and its variables in pharmaceutical industry companies in Jordan. Restriction Parameter (F) was (955.622) of the Organizational performance in pharmaceutical industry companies in Jordan will be caused from for Entrepreneurial orientation specially (Innovativeness and Proactivity).

Forth Hypothesis (H_{04}). There is no impact of knowledge management and its variables (Knowledge acquisition, Knowledge storage, Knowledge sharing, Knowledge application) on the Organizational performance and its variables (Performance of Employees, Commitment to quality standards) in the presence of Entrepreneurial Orientation as a mediating variable at ($\alpha \leq 0.05$) in the pharmaceutical industry companies in Jordan

The model is built in AMOS and the graph is shown below, and estimates of the standardized parameters are shown in the graph. The boxes represent the observed variables and the circles for the error terms. AMOS refers to the correlation structure between the error conditions of the confirmatory factor analysis after fitting the prototype without any associated error conditions. This can improve the overall model synthesis.

The goodness-of-fit test statistics are displayed below. Please note the Chi-square test statistic is significant at 0.05, which suggest that the model fitting is only acceptable.

The Root Mean Square Error of Approximation (RMSEA) estimates lack of fit compared to the saturated model. (RMSEA) is 0.550, it indicates a good fit..

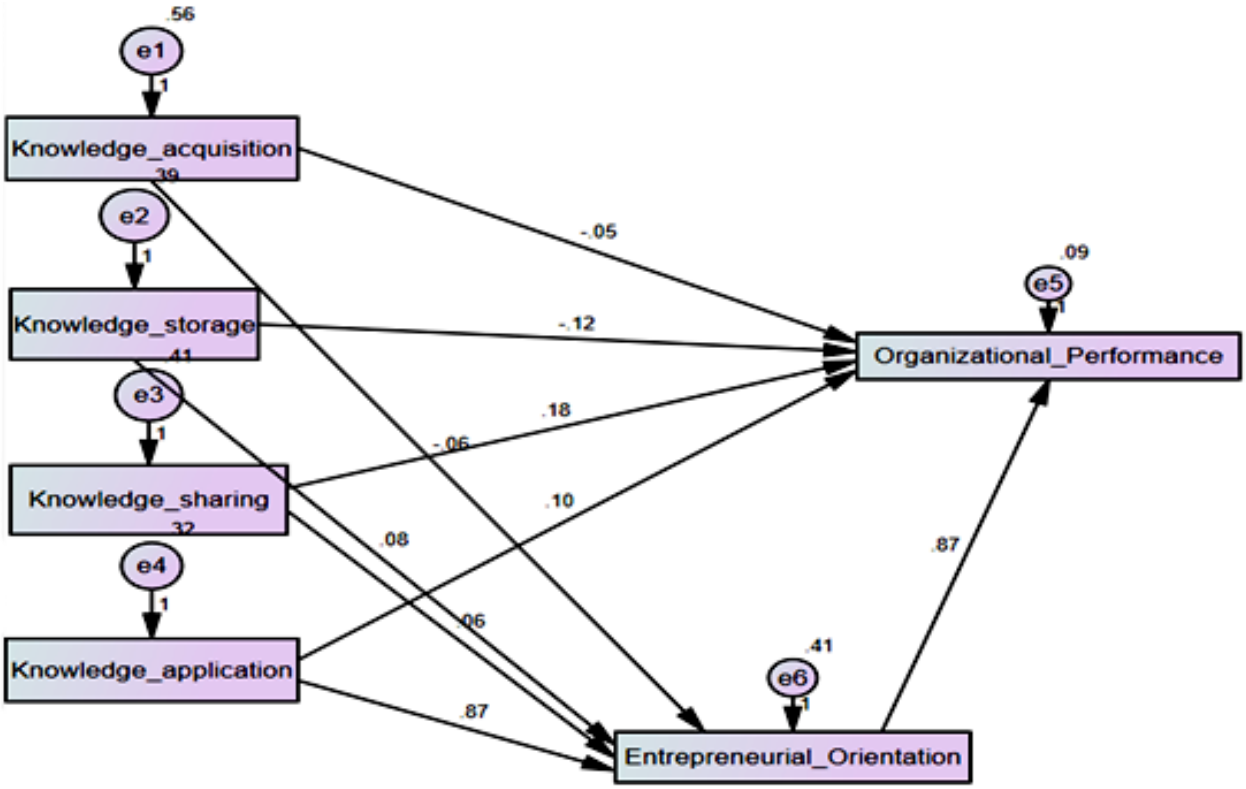

Figure 2 Structural equation model.

Table 6 Structural equation model to check the impact of knowledge management and its variables (Knowledge acquisition, Knowledge storage, Knowledge sharing, Knowledge application) on the Organizational performance and its variables (Performance of Employees, Commitment to quality standards) in the presence of Entrepreneurial Orientation as a mediating variable at ($\alpha \leq 0.05$) in the pharmaceutical industry companies in Jordan.

hypothesis	Chi2	GFI	CFI	RMSEA
Impact of knowledge management and its variables (Knowledge acquisition, Knowledge storage, Knowledge sharing, Knowledge application) on the Organizational performance in the presence of Entrepreneurial Orientation as a mediating variable at ($\alpha \leq 0.05$) in the pharmaceutical industry companies in Jordan.	811.864	0.759	**0.792**	0.258

Independent Variable		Dependent Variable	Estimate	S.E.	C.R.	P (Sig)
Knowledge acquisition	→	Entrepreneurial Orientation	.060	.043	1.385	.166
Knowledge storage	→	Entrepreneurial Orientation	-.046	.020	-2.254	.024
Knowledge sharing	→	Entrepreneurial Orientation	.103	.034	3.017	.003
Knowledge application	→	Entrepreneurial Orientation	.867	.057	15.231	***
Entrepreneurial Orientation	→	Organizational performance	0.699	0.018	41.959	***
Knowledge acquisition	→	Organizational performance	.059	.050	1.165	.244
Knowledge storage	→	Organizational performance	.005	.023	.206	.837
Knowledge sharing	→	Organizational performance	.119	.025	4.841	***
Knowledge application	→	Organizational performance	.182	.024	7.584	***

GFI, the goodness of fit index, tells the model accounts for you what proportion of the variance in the sample variance covariance matrix. This should exceed (0.7) for a good model. For the saturated model, it will be a perfect 1. Goodness of Fit Index (GFI) (0.759) in this model. Which represent also strength of the model. (75.9%).

4. DISCUSSION

In this study, part of the industry sectors in Jordan was being examined to show how the impact of knowledge management processes on the internal organizational procedures. The first hypothesis evaluates the effect of knowledge management processes on

improving organizational performance, which showed a positive relationship with statistical significance. Based on R2 (0.424), the result shows that knowledge management is a key factor in improving job performance and standards. The result is compatible with the work of Koohang et al., (2017) and Abualoush et al., (2018). This result shows that knowledge management in all its aspects and operations works to raise the company's efficiency and improve its competitive capabilities by focusing on one of the main axes within it, which is the employees by supporting them and increasing their level of work, experience and proficiency. Also, the role of skill, creative thinking and innovation must be activated among employees in terms of the pharmaceutical industry and the marketing of these medicines in order to obtain better results and seize more opportunities. (Nwankpa et al., 2021).

The second hypothesis indicates that knowledge management positively affects the entrepreneurial orientation. This is supported because the value of t is (1.094). Based on the beta coefficient, there is a positive and statistically significant relationship between knowledge management and entrepreneurial orientation. This is consistent with the work of de Guimaraes et al. (2018) and Alshanty & Emeagwali (2019), who also found that knowledge management positively affects entrepreneurial orientation. The workers' possession of experience is one of the important reasons for development and prosperity. This happens because of training employees to keep up with developments and what is new in the world of knowledge management, as well as increasing their cultural and cognitive sources will contribute to providing the company and production with creative and modern ideas. (Iqbal, 2021) Thus, they will take advantage of good opportunities and raise the level of the company. The result is also in line with Weerakoon et al. (2020), who suggest that there is a direct relationship between the experience of employees and the high level of competitive advantage of the company by providing the market with distinctive products

The third hypothesis studies the impact of entrepreneurial orientation on the development of organizational performance. Which showed the existence of a statistically significant correlation between the entrepreneurial orientation and its dimensions on organizational performance in pharmaceutical companies in Jordan. This positive relationship was found by Chavez et al. (2017), Hoque (2018). In addition, the integration of organizational performance and entrepreneurship improves the work of companies (Yousaf & Majid, 2018). One of the foundations of the success of companies is sensing the needs of customers and studying the feedback in order to achieve a competitive standard between companies in attracting customers through an entrepreneurial orientation. In addition, companies must follow up the internal organization in terms of employees and performance level, as well as the external organization that is based on customers and dealing with them. Employees also should be passionate because it is a motive for creativity and achievement and helps them to integrate within the company's environment and thus deal with customers within entrepreneurial-oriented behaviors.

The fourth hypothesis suggested that the entrepreneurial orientation mediates the relationship between knowledge management and organizational performance. Mediation analysis indicates a statistically significant mediation effect. The results showed that the entrepreneurial orientation positively mediates the relationship between knowledge management and organizational performance. Pharmaceutical companies can merge knowledge management with entrepreneurial orientation, which further will support the organized planning within the company. By having more knowledge, skill and experience to employees and supporting entrepreneurship will raise the efficiency of production and services, as well as the growth and improvement of employee performance, and all of this will give the company an advantage. (Latif et al., 2020). This result is consistent with those of Monteiro et al. (2019), Abubakar et al. (2019).

Implications of the study

First, the aim of the research is to present the effect of both entrepreneurial orientation and knowledge management on the organizational performance of pharmaceutical companies in Jordan. Although the concept of knowledge management (Wach et al., 2018; Abbas & Kumari, 2021) The four procedures in knowledge management which are (Knowledge acquisition, Knowledge storage, Knowledge sharing, Knowledge application) work together and significantly affect the organizational performance and work within the company, which will contribute to its development and distinction. Moreover, the current studies show that the entrepreneurial orientation is

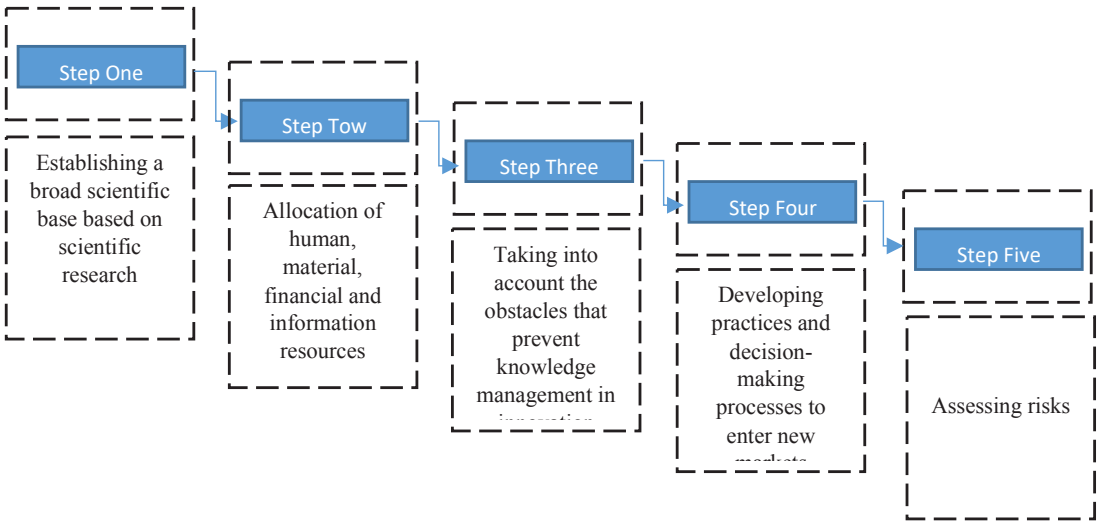

Figure 2 Proposed model of the moderating effect of entrepreneurial orientation on the impact of knowledge management processes on successful organizational performance.

one of the reasons for the success of organizational performance, as it enhances quality criterions and raises the productive capacity of employees. (Hussinki et al., 2017). In fact, the results indicate that the success of pharmaceutical companies is based on the amount of quantitative cognitive experience that employees possess and how it been applied. Second, the study criteria have been classified into two parts–commitment to quality standards, and employee performance—and an empirical impact assessment between the two perspectives–due to the complexity of the organizational performance of pharmaceutical companies. Thus, there is a direct link or relationship that depends on the high performance of the employees and in return also the increase in the quality standards to be achieved

All those working in the field of entrepreneurship and knowledge management are interested in this research as well as anyone else who can read it. Companies should keep up and continue to search for new ways and mechanisms for knowledge management (Raudeliuniene et al., 2020), to improve the organizational and functional performance (Sahibzada et al., 2020). To activate this model, we propose the following five steps as shown in Figure (2): 1. The first step: Establishing a broad scientific base based on scientific research that enables administrative and operational levels to acquire transfer and apply knowledge. 2. The second step: an appropriate allocation of human, material, financial and information resources, in the presence of an effective administration capable of clearly setting strategies for all. 3. The third step: taking into account the obstacles that prevent knowledge management in innovation. 4. The fourth step: developing practices and decision-making processes to enter new markets, discovering opportunities available in the market, and adopting new ideas within the company. 5. Fifth step: assessing risks, taking into account the possibilities that arise from the interactions of the last steps.

5. CONCLUSION

Knowledge management is one of the ways to raise the level of job performance and support the entrepreneurial orientation of companies. There are many studies explain that knowledge management methods and processes support employees' experiences and skills, and thus affect the extent of their motivation. As a result, it can be said that the application of knowledge management processes in pharmaceutical companies will increase production capacity while raising the value of quality, gaining positive recommendation from customers as well strengthening the entrepreneurial orientation. By referring to the company's goal, customers, entrepreneurial orientation can modify and innovate according to the feedback obtained from them and thus gain more customers and profits. According to this research, Knowledge management aims to provide employees with the experience and skills necessary to be able to meet the needs of customers in a better and more distinctive way than other companies in the market. The enforcement of the entrepreneurial approach causes companies to innovate new businesses that ultimately will form the active elements.

REFERENCES

Abbas, J., & Kumari, K. (2021). Examining the relationship between total quality management and knowledge management and their impact on organizational performance: a dimensional analysis. *Journal of Economic and Administrative Sciences*. 1026–4116. https://doi.org/10.1108/JEAS-03-2021-0046

Abdi, K., Mardani, A., Senin, A. A., Tupenaite, L., Naimaviciene, J., Kanapeckiene, L., & Kutut, V. (2018). The effect of knowledge management, organizational culture and organizational learning on innovation in automotive industry. *Journal of business economics and management*, *19*(1), 1–19. https://doi.org/10.3846/jbem.2018.1477

Abualoush, S., Masa'deh, R. E., Bataineh, K., & Alrowwad, A. (2018). The role of knowledge management process and intellectual capital as intermediary variables between knowledge management infrastructure and organization performance. *Interdisciplinary Journal of Information, Knowledge, and Management*, *13*, 279–309. https://doi.org/10.28945/4088

Abubakar, A. M., Elrehail, H., Alatailat, M. A., & Elçi, A. (2019). Knowledge management, decision-making style and organizational performance. *Journal of Innovation & Knowledge*, *4*(2), 104–114. https://doi.org/10.1016/j.jik.2017.07.003

Al Khajeh, E. H. (2018). Impact of leadership styles on organizational performance. *Journal of Human Resources Management Research*, *2018*, 1–10. Http://10.5171/2018.687849

Al Shraah, A., Abu-Rumman, A., Al Madi, F., Alhammad, F. A. F., & AlJboor, A. A. (2021). The impact of quality management practices on knowledge management processes: a study of a social security corporation in Jordan. *The TQM Journal*. https://doi.org/10.1108/TQM-08-2020-0183

Al-Ahbabi, S., Singh, S. K., Gaur, S. S., & Balasubramanian, S. (2017). A knowledge management framework for enhancing public sector performance. International Journal of Knowledge Management Studies, 8(3–4), 329–350. https://doi.org/10.1504/IJKMS.2017.087076

Alghail, A., Yao, L., Abbas, M., & Baashar, Y. (2021). Assessment of knowledge process capabilities toward project management maturity: an empirical study. *Journal of Knowledge Management*. http://dx.doi.org/10.1108/JKM-03-2021-0180

Alghamdi, F. (2018). Total quality management and organizational performance: A possible role of organizational culture. *International Journal of Business Administration*, *9*(4), 186–200. http://10.5430/ijba.v9n4p186

Ali, B. J., & Anwar, G. (2021). A study of knowledge management alignment with production management: A study of carpet manufacture in Kurdistan region of Iraq. *Ali, BJ, & Anwar, G.(2021). A Study of Knowledge Management Alignment with Production Management: a Study of Carpet Manufacture in Kurdistan Region of Iraq. International Journal of English Literature and Social Sciences*, *6*(2), 346–360. *https://dx.doi.org/10.22161/ijels.62.51*

Allameh, S. M., & Zare, S. M. (2011). Examining the impact of KM enablers on knowledge management processes. *Procedia computer science*, *3*, 1211–1223. http://dx.doi.org/10.1016/j.procs.2010.12.196

Alshanty, A. M., & Emeagwali, O. L. (2019). Market-sensing capability, knowledge creation and innovation: The moderating role of entrepreneurial-orientation. *Journal of Innovation & Knowledge*, *4*(3), 171–178. https://doi.org/10.1016/j.jik.2019.02.002

Andrew, A. (2017). Employees' commitment and its impact on organizational performance. *Asian Journal of Economics, Business and Accounting*, 1–13. https://doi.org/10.9734/AJEBA/2017/38396

Anwar, G., & Abdullah, N. N. (2021). The impact of Human resource management practice on Organizational performance. *International journal of Engineering, Business and Management (IJEBM)*, *5*. https://dx.doi.org/10.22161/ijebm.5.1.4

Anwar, K., & Ghafoor, C. (2017). Knowledge management and organizational performance: A study of private universities in Kurdistan. *International Journal of Social Sciences & Educational Studies*, *4*(2), 53.

Areed, S., Salloum, S. A., & Shaalan, K. (2021). The role of knowledge management processes for enhancing and supporting innovative organizations: a systematic review. *Recent Advances in Intelligent Systems and Smart Applications*, 143–161. https://doi.org/10.1007/978-3-030-47411-9_8

Arzubiaga, U., Kotlar, J., De Massis, A., Maseda, A., & Iturralde, T. (2018). Entrepreneurial orientation and innovation in family SMEs: Unveiling the (actual) impact of the Board of Directors. *Journal of Business Venturing*, *33*(4), 455–469. https://doi.org/10.1016/j.jbusvent.2018.03.002

Barley, W. C., Treem, J. W., & Kuhn, T. (2018). Valuing multiple trajectories of knowledge:

A critical review and agenda for knowledge management research. Academy of Management Annals, 12(1), 278–317. https://doi.org/10.5465/annals.2016.0041

Bolisani, E., & Bratianu, C. (2017). *Emergent knowledge strategies: Strategic thinking in knowledge management* (Vol. 4). Springer.

Chavez, R., Yu, W., Jacobs, M. A., & Feng, M. (2017). Manufacturing capability and organizational performance: The role of entrepreneurial orientation. *International Journal of Production Economics*, *184*, 33–46. https://doi.org/10.1016/j.ijpe.2016.10.028

Claver-Cortés, E., Zaragoza-Sáez, P., & Pertusa-Ortega, E. (2007). Organizational structure features supporting knowledge management processes. *Journal of Knowledge management*. http://dx.doi.org/10.1108/13673270710762701

Corrêa, V. S., Queiroz, M. M., & Shigaki, H. B. (2021). Social capital and individual entrepreneurial orientation: innovativeness, proactivity, and risk-taking in an emerging economy. *Benchmarking: An International Journal*. 28(7), 2280–2298. https://doi.org/10.1108/BIJ-11-2020-0602

Daud, S., & Yusuf, W. (2008). An empirical study of knowledge management processes in Small and Medium Enterprises. *Communications of the IBIMA*, *4*(22), 169–177.

de Guimaraes, J. C. F., Severo, E. A., & de Vasconcelos, C. R. M. (2018). The influence of entrepreneurial, market, knowledge management orientations on cleaner production and the sustainable competitive advantage. *Journal of cleaner production*, *174*, 1653–1663. https://doi.org/10.1016/j.jclepro.2017.11.074

Durst, S., & Zieba, M. (2019). Mapping knowledge risks: towards a better understanding of knowledge management. Knowledge Management Research & Practice, 17(1), 1–13. https://doi.org/10.1080/14778238.2018.1538603

Gacanin, H. (2019). Autonomous wireless systems with artificial intelligence: A knowledge management perspective. *IEEE Vehicular Technology Magazine*, *14*(3), 51–59. https://doi.org/10.1109/MVT.2019.2920162

Genc, E., Dayan, M., & Genc, O. F. (2019). The impact of SME internationalization on innovation: The mediating role of market and entrepreneurial orientation. *Industrial Marketing Management*, *82*, 253–264. https://doi.org/10.1016/j.indmarman.2019.01.008

George, B., Walker, R. M., & Monster, J. (2019). Does strategic planning improve organizational performance? A meta-analysis. *Public Administration Review*, *79*(6), 810–819. https://doi.org/10.1111/puar.13104

Gopinath, R. (2021). Job Involvement Influence to Knowledge Management–A Study.

Hamza, P. A., Othman, B. J., Gardi, B., Sorguli, S., Aziz, H. M., Ahmed, S. A., ... & Anwar, G. (2021). Recruitment and Selection: The Relationship between Recruitment and Selection with Organizational Performance. *International Journal of Engineering, Business and Management*, *5*(3), 1–13. https://dx.doi.org/10.22161/ijebm.5.3.1

Hoque, A. S. M. M. (2018). The effect of entrepreneurial orientation on Bangladeshi SME performance: Role of organizational culture. *International Journal of Data and Network Science*, *2*(1), 1–14. https://doi.org/10.5267/j.ijdns.2018.7.001

Hussinki, H., Ritala, P., Vanhala, M., & Kianto, A. (2017). Intellectual capital, knowledge management practices and firm performance. *Journal of intellectual capital*. https://doi.org/10.1108/JIC-11-2016-0116

Iqbal, A. (2021). Innovation speed and quality in higher education institutions: the role of knowledge management enablers and knowledge sharing process. *Journal of Knowledge Management*. http://dx.doi.org/10.1108/JKM-07-2020-0546

Jiang, X., Liu, H., Fey, C., & Jiang, F. (2018). Entrepreneurial orientation, network resource acquisition, and firm performance: A network approach. *Journal of Business Research*, *87*, 46–57. https://doi.org/10.1016/j.jbusres.2018.02.021

Khalid, N., Islam, D. M. Z., & Ahmed, M. R. M. (2019). Sentrepreneurial Training and Organizational Performance: Implications for Future. *Humanities & Social Sciences Reviews*, *7*(2), 590–593.

Khan, S. H., Majid, A., Yasir, M., Javed, A., & Shah, H. A. (2021). The role of social capital in augmenting strategic renewal of SMEs: does entrepreneurial orientation and organizational flexibility really matter?. *World Journal of Entrepreneurship, Management and Sustainable Development*. 17(2), 227–245. https://doi.org/10.1108/WJEMSD-04-2020-0029

Ključnikov, A., Civelek, M., Čech, P., & Kloudova, J. (2019). Entrepreneurial orientation of SMEs? executives in the comparative perspective for Czechia and Turkey. Oeconomia Copernicana, 10(4), 773–795. https://doi.org/10.24136/oc.2019.035

Koohang, A., Paliszkiewicz, J., & Goluchowski, J. (2017). The impact of leadership on

trust, knowledge management, and organizational performance: A research model. *Industrial Management & Data Systems*. https://doi.org/10.1108/IMDS-02-2016-0072

Latif, K. F., Afzal, O., Saqib, A., Sahibzada, U. F., & Alam, W. (2020). Direct and configurational paths of knowledge-oriented leadership, entrepreneurial orientation, and knowledge management processes to project success. *Journal of Intellectual Capital*. 22(1), 149–170. https://doi.org/10.1108/JIC-09-2019-0228

McKenny, A. F., Short, J. C., Ketchen Jr, D. J., Payne, G. T., & Moss, T. W. (2018). Strategic entrepreneurial orientation: Configurations, performance, and the effects of industry and time. *Strategic Entrepreneurship Journal*, *12*(4), 504–521. https://doi.org/10.1002/sej.1291

Monteiro, A. P., Soares, A. M., & Rua, O. L. (2019). Linking intangible resources and entrepreneurial orientation to export performance: The mediating effect of dynamic capabilities. *Journal of Innovation & Knowledge*, *4*(3), 179–187. https://doi.org/10.1016/j.jik.2019.04.001

Monteiro, A. P., Soares, A. M., & Rua, O. L. (2019). Linking intangible resources and entrepreneurial orientation to export performance: The mediating effect of dynamic capabilities. Journal of Innovation & Knowledge, 4(3), 179–187. https://doi.org/10.1016/j.jik.2019.04.001

Muthuveloo, R., Shanmugam, N., & Teoh, A. P. (2017). The impact of tacit knowledge management on organizational performance: Evidence from Malaysia. *Asia Pacific Management Review*, *22*(4), 192–201. https://doi.org/10.1016/j.apmrv.2017.07.010

Nwankpa, J. K., Roumani, Y., & Datta, P. (2021). Process innovation in the digital age of business: the role of digital business intensity and knowledge management. *Journal of Knowledge Management*. http://dx.doi.org/10.1108/JKM-04-2021-0277

Othman, B. J., Al-Kake, F., Diah, M. L. M., Othman, B., & Hasan, N. M. (2019). This study examines the antecedents and the effects of knowledge management and information technology in the manufacturing industry. *International Journal of Psychosocial Rehabilitation*, *23*(02).

Pang, K., & Lu, C. S. (2018). Organizational motivation, employee job satisfaction and organizational performance: An empirical study of container shipping companies in Taiwan. *Maritime Business Review*. https://doi.org/10.1108/MABR-03-2018-0007

Raudeliuniene, J., Albats, E., & Kordab, M. (2020). Impact of information technologies and social networks on knowledge management processes in Middle Eastern audit and consulting companies. *Journal of Knowledge Management*. 25(4), 871–898. http://dx.doi.org/10.1108/JKM-03-2020-0168

Sahibzada, U. F., Latif, K. F., Xu, Y., & Khalid, R. (2020). Catalyzing knowledge management processes towards knowledge worker satisfaction: fuzzy-set qualitative comparative analysis. *Journal of Knowledge Management*. 24(10), 2373–2400. http://dx.doi.org/10.1108/JKM-02-2020-0093

Schmitz, S., Rebelo, T., Gracia, F. J., & Tomás, I. (2014). Learning culture and knowledge management processes: To what extent are they effectively related?. *Revista de Psicología del Trabajo y de las Organizaciones*, *30*(3), 113–121. http://dx.doi.org/10.1016/j.rpto.2014.11.003

Schneider, B., Yost, A. B., Kropp, A., Kind, C., & Lam, H. (2018). Workforce engagement: What it is, what drives it, and why it matters for organizational performance. *Journal of Organizational Behavior*, *39*(4), 462–480. https://doi.org/10.1002/job.2244

Serrat, O. (2017). *Knowledge solutions: Tools, methods, and approaches to drive organizational performance* (p. 1140). Springer Nature.

Shanker, R., Bhanugopan, R., Van der Heijden, B. I., & Farrell, M. (2017). Organizational climate for innovation and organizational performance: The mediating effect of innovative work behavior. *Journal of vocational behavior*, *100*, 67–77. http://dx.doi.org/10.1016/j.jvb.2017.02.004

Tajeddini, K., Martin, E., & Ali, A. (2020). Enhancing hospitality business performance: The role of entrepreneurial orientation and networking ties in a dynamic environment. *International Journal of Hospitality Management*, *90*, 102605. https://dx.doi.org/10.1016%2Fj.ijhm.2020.102605

Wach, K., Głodowska, A., & Maciejewski, M. (2018). Entrepreneurial orientation, knowledge utilization and internationalization of firms. *Sustainability*, *10*(12), 4711. http://dx.doi.org/10.3390/su10124711

Wales, W. J., Covin, J. G., & Monsen, E. (2020). Entrepreneurial orientation: The necessity of a multilevel conceptualization. *Strategic Entrepreneurship Journal*, *14*(4), 639–660. https://doi.org/10.1002/sej.1344

Wales, W., Gupta, V. K., Marino, L., & Shirokova, G. (2019). Entrepreneurial orientation: International, global and cross cultural

research. *International Small Business Journal*, *37*(2), 95–104. https://doi.org/10.1177/0266242618813423

Wanasida, A. S., Bernarto, I., Sudibjo, N., & Pramono, R. (2021). Millennial transformational leadership on organizational performance in Indonesia fishery startup. *The Journal of Asian Finance, Economics, and Business*, *8*(2), 555–562. https://doi.org/10.13106/jafeb.2021.vol8.no2.0555

Webb, S. P. (2017). *Knowledge management: Linchpin of change*. Routledge. https://doi.org/10.4324/9781351227223

Wee, J. C., & Chua, A. Y. (2013). The peculiarities of knowledge management processes in SMEs: the case of Singapore. *Journal of knowledge management*. https://dr.ntu.edu.sg/bitstream/10356/144782/2/The%20peculiarities%20of%20knowledge%20management%20processes%20in%20SMEs%20The%20case%20of%20Singapore.pdf

Weerakoon, C., McMurray, A. J., Rametse, N., & Arenius, P. (2020). Knowledge creation theory of entrepreneurial orientation in social enterprises. *Journal of Small Business Management*, *58*(4), 834–870. https://doi.org/10.1080/00472778.2019.1672709

Yousaf, Z., & Majid, A. (2018). Organizational network and strategic business performance: does organizational flexibility and entrepreneurial orientation really matter?. *Journal of Organizational Change Management*. https://doi.org/10.1108/JOCM-12-2016-0298

Yusr, M. M., Mokhtar, S. S. M., Othman, A. R., & Sulaiman, Y. (2017). Does interaction between TQM practices and knowledge management processes enhance the innovation performance?. *International Journal of Quality & Reliability Management*. http://dx.doi.org/10.5171/2010.826105

Zaim, H., Muhammed, S., & Tarim, M. (2019). Relationship between knowledge management processes and performance: Critical role of knowledge utilization in organizations. *Knowledge Management Research & Practice*, *17*(1), 24–38. http://www.tandfonline.com/action/showCitFormats?doi=10.1080/14778238.2018.1538669

Zhai, Y. M., Sun, W. Q., Tsai, S. B., Wang, Z., Zhao, Y., & Chen, Q. (2018). An empirical study on entrepreneurial orientation, absorptive capacity, and SMEs' innovation performance: A sustainable perspective. *Sustainability*, *10*(2), 314. https://doi.org/10.3390/su10020314

Zhang, X., & Venkatesh, V. (2017). A nomological network of knowledge management system use: Antecedents and consequences. MIS quarterly, 41(4), 1275–1306. https://doi.org/10.25300/MISQ/2017/41.4.12

Mbaidin, H. O. (2021). The Impact of ICT Critical Success Factors in Strategic planning: an Applied Study in Jordanian Government Agencies. Indian Journal of Economics and Business, 20(2), 281–298. https://doi.org/10.5281/zenodo.5409342

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Sharia Compliance, Islamic Corporate Governance, and Fraud: A study of Sharia Banks in Indonesia

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ABSTRACT This study aims to examine the effect of Islamic Corporate Governance and Sharia Compliance on indications of fraud occurring in Indonesia's Islamic Banks from 2016 to 2020. The independent variables are Islamic Corporate Governance and Sharia Compliance with the Proxy of Islamic Income Ratio and Profit Sharing Ratio. The dependent variable is fraud in Islamic Commercial Banks. The population in this study were all Islamic Banks registered in the Financial Services Authority in the period 2016 to 2020. The samples were selected using the purposive sampling method. In this study, there were 11 Islamic Banks with a 5 years research period so that the total sample used in this study amounted to 55. The analytical method used in this study was logistic regression which was processed using SPSS version 25. The results of this study indicate that the Islamic Corporate Governance variable has a positive influence on indications of fraud occurring in Islamic Commercial Banks, Sharia Compliance with the Proxy Profit Sharing Ratio has a negative influence on indications of fraud occurrence in Islamic Commercial Banks while Sharia Compliance with the proxy of Islamic Income Ratio does not affect the indications of the occurrence of frauds in Islamic Commercial Banks.

KEYWORDS: Islamic Corporate Governance, Fraud, Sharia Compliance, Islamic Bank

1. INTRODUCTION

The existence of a type of bank clinging to the Islamic principle shall promise the public trust towards the security upon things that against Islamic sharia. On the contrary, the Indonesian public trust on the Sharia Bank is far less compared with conventional banks. Sharia Bank is a financial institution that implements its activities based on Islamic sharia principles stated in the Al-Quran and Hadith. Therefore, all transactions of Islamic Banks must adhere to the rules and regulations that apply to the contracts in the Islamic commercial transaction jurisprudence or *fiqh muamalah*. With its nature of existence which inherently following the Islamic principle, there should entail the people's trust guarantee in security to avoid things that are not following Islamic law (Yumna, 2019). However, in the practice of Indonesian public trust, the trust in Islamic banks is still very less than that of conventional banks. Based on data published by the Financial Services Authority, the Islamic Bank market share in March 2019 occupies only 5.94% of the total banking market share in Indonesia (Otoritas Jasa Keuangan, 2019). This shows that public interest in Islamic banks is still relatively very low.

The performance evaluation applied to the Islamic Banks tends to prioritize solely on the financial aspects where the measurement of its performance obliges the same ratio as found at the 'Conventional Banks'; rather the Sharia Banks should not neglect the Islamic principle that needs to be applied to Islamic Banks (Haifa & Rini, 2016). The existence of sharia elements themselves cannot promise the guarantee that an institution is free from fraud. Recall that as of now, there are still

fraud cases that occur in Islamic Banks. One of the fraud cases at Bank Syariah Mandiri suspected of channeling fictitious financing for IDR 1,100,000,000,000 where the submission of debtor funds did not used according to the proposal when the money was disbursed referring the indications that the funds were used for personal interests (Yuli, 2020). Although fraud-prone to occur anywhere, fraud in Islamic Banks is very contrary to Islamic principles adhered closely to Islamic Banks.

The corporate governance weaknesses found in Islamic banks have attracted Islamic finance experts to raise a specific important issue related to governance weaknesses in Islamic banking companies, namely *Islamic Corporate Governance* (Marheni, 2017). The banks are required to carry out regular self-assessments on the implementation of Good Corporate Governance based on rankings of 11 factors that are concluded as complete values, then the results of the assessment will be ranked (1 to 5) with the smaller indicates the better (Nelson, 2014). Ironically, real-world implementation of Bank Mandiri Syariah which is ranked 1 (Very Good) has a higher fraud (25 cases) compared to ranked-2 (good) BTPN Syariah with no fraud committed in 2017. According to (Abdi, 2017), the implementation of Good Corporate Governance can be used in efforts to prevent fraud in the Islamic Banks.

Islamic Corporate Governance is an important issue related to governance weaknesses in the Islamic banking and is also dominated by the Sharia Bank compliance with the sharia principles since Sharia Bank management is deemed unable to guarantee sharia compliance in the banking services provided (Ansori, 2014). The low compliance with sharia principles provides an opportunity for fraud committed in the Islamic Banks. According to Marheni (2017), the Islamic Disclosure Index can be utilized to measure Sharia compliance indicators and the indicators employed in this study is the Islamic Income Ratio and Profit Sharing Ratio. According to Hameed in Marheni (2017), Islamic Income Ratio is the income derived from Islamic activities and investments in compliance with the principles of Islamic law. The Islamic Income Ratio is the ratio between the halal income obtained compared to the total income consisting of total Islamic income and non-halal income. With the implementation of Islamic principles and corporate governance in Islam, the practice of fraud will be reduced.

The higher level of compliant Bank Syariah to Islamic principles in its governance is, the less likely fraud to take a place. However, the Muamalat Bank whose Islamic income of 87% of its total income, there were still 35 cases of fraud in 2017. While in Mega Syariah Bank with 75% Islamic Income Ratio, there were only 3 cases of fraud occurred in 2017. It suggests that despite the good adherence to Islamic principles, it does not necessarily indicate the lean possibility of fraud. According to Marheni (2017) Profit Sharing Ratio or profit-sharing financing is financing based on sharia principles and is defined as the percentage of profit sharing financing conducted by the Islamic Banks which includes profit sharing (*mudharabah)* and partnership sharing (*musharakah)* to total financing. When a Sharia Bank has implemented a strong sharia principle and is financing profit sharing based on sharia principles, the possibility of fraud will even be smaller.

The sharia-compliance for the profit-sharing financing ratios and Islamic income ratios reduces the possibility of fraud at the Islamic Banks. Panin Syariah Bank, with a profit-sharing ratio of 84% higher than that of BNI Syariah Bank with 23%, has fraud occurrence more prevalent ironically. For BNI Syariah Bank, although the profit-sharing ratio was low at 23% of the total financing, no fraud was spotted. This study refers to research conducted by Rahmayani & Rahmawaty (2017), the difference in research lies in the independent variable used is Sharia Compliance. They further noticed that Islamic Corporate Governance does not influence indications of fraud at Islamic Commercial Banks. According to Mohamed I, Cholins G, Opong, & Avison (2017) found that Dynamic Corporate Governance does not have a significant effect on financial reporting fraud. Align with the latter research Haifa & Rini, (2016) that Islamic Corporate Governance does not influence indications of fraud at Islamic Banks. However, according to In'airat (2016), Corporate Governance has a significant influence on fraud. This is in line with the study conducted by Sitti (2016) where Dynamic Corporate Governance has a positive effect on fraud. Good Corporate Governance influences fraud prevention. It means that the implementation of the Corporate Governance mechanism in Islamic Banks by observing and implementing all Islamic principles could decrease the occurrence of fraud Abdi (2017). In addition, according to Ismail & Zakia (2013) weak corporate governance prone corporate management to commit fraud.

According to Marheni (2017), the Islamic Income Ratio has a significant negative effect on fraud. Similar to that the Profit Sharing Ratio that has a negative and significant effect on fraud. The research aligns with Haifa & Rini (2016), which suggest that Sharia Compliance which is proxied by Profit Sharing Ratio has a negative effect on fraud, but Sharia Compliance which is proxied by Islamic Income Ratio does not influence indications of fraud. Besides, the research Lutfinanda & Sinarasri (2013) suggest that Sharia Compliance does not affect sharia banking compliance with sharia principles.

Based on the phenomenon upon the aforementioned cases and the inconsistencies in the previous research, the research related to fraud in Islamic Banks becomes interesting to be revisited. This study aims to determine the partial effect between Islamic Income Ratio and Profit Sharing Ratio on Islamic Corporate Governance. Also, it is to understand partially between Islamic Income Ratio, Profit Sharing Ratio and Islamic Corporate Governance to the indication of fraud. The last, it is to observe the effect of Islamic Income Ratio and Profit Sharing Ratio on indications of fraud through Islamic Corporate Governance.

2. THEORY

2.1 The Effect of Islamic Income Ration on Islamic Corporate Governance

The performance of Sharia Bank could be measured with the following indicators: Islamic Income Ratio and Profit Sharing Ratio (Lidyah, 2020). To obtain good performance, decent company management is required. Prior studies indicated that Islamic Income Ration has a positive correlation on Islamic Corporate Governance (Meilani, 2016). This reveals that the higher the level of Islamic Income Ration or performance

2.2 The Effect of Islamic Income Ration on Islamic Corporate Governance

The performance of Sharia Bank could be measured with the following indicators: Islamic Income Ratio and Profit Sharing Ratio (Lidyah, 2020). To obtain good performance, decent company management is required. Prior studies indicated that Islamic Income Ration has a positive correlation on Islamic Corporate Governance (Meilani, 2016). This reveals that the level of Islamic Income Ratio or finance performance of Sharia Bank is in correspondence with the implementation level of Islamic Corporate Governance on Sharia Bank.

H_1: Islamic Income Ratio has positive effects on Islamic Corporate Governance in Sharia Bank

2.3 The Effects of Profit-Sharing on Islamic Corporate Governance

One of many reasons that sharia bank has a low-Profit Sharing Ratio is because of the lack of management ability to monitor operational activities, or in other words, it has a low implementation of Islamic Corporate Governance (Sapuan, Sanusi, Ismail, & Wibowo, 2016). Prior study found the positive correlation between Profit Sharing Ration on Islamic Corporate Governance; the higher the Profit Sharing Ratio, the higher the management implementation based on Sharia laws (Alhammadi, Archer, Padgett, & Abdel Karim, 2020).

H_2: *Profit Sharing Ratio* has positive effects on Islamic Corporate Governance in Sharia Banks.

2.4 The Effects of Islamic Income Ratio on Fraud

The sharia principle forbids usury, *gharar*, and gambling since it promotes halal finance transactions. Therefore, Sharia Bank only procure the income from halal source as *mudharib*. A study found that Islamic Income Ratio has a negative effect on fraud (Marheni, 2017). When a Sharia Bank adheres and conducts its business according to sharia principles by reducing non-halal income or usury, minimize fraud is expected because the management of funds is based on Islamic principles and prudence. Thus, if Islamic income increases, the possibility of fraud will decrease because Islamic income that is following sharia principles is an indication of Islamic Bank compliance with sharia principles. So, the hypothesis proposed in this study is:

H3: Islamic Income Ratio has a negative effect on fraud on Sharia Bank.

2.5 The Effects of Profit-Sharing Ratio on Fraud

Profit-sharing financing is financing based on sharia principles. Per UU No. 21 of 2008 concerning Sharia Banking profit sharing, financing in sharia banking is carried out through *mudharabah* and *musharakah* contracts

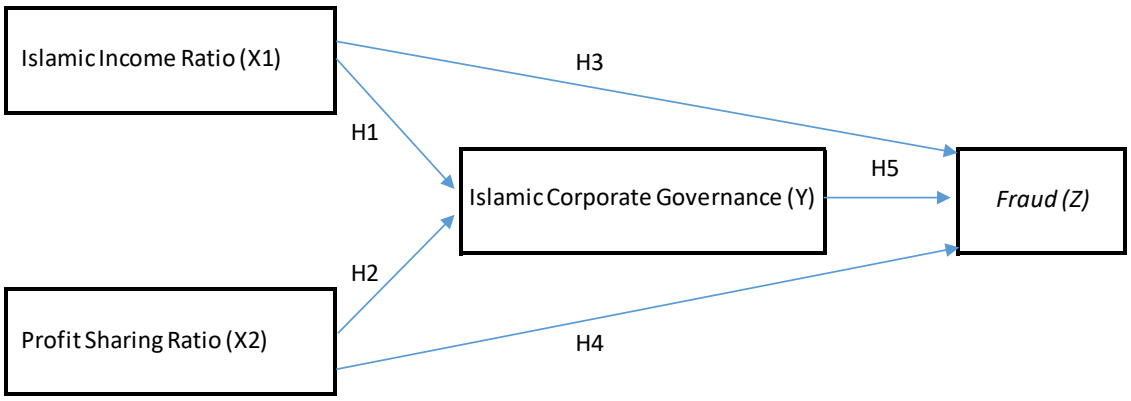

Figure 1 Conceptual Frame.

(Kementrian Hukum Dan HAM, 2008). If compliance with sharia principles is low, it will potentially initiated fraud. Therefore, a guarantee is needed for the application of sharia principles in all customer fund management. Studies conducted by Marheni (2017) and Haifa & Rini (2016) succeeded in proving the negative effect of the profit sharing ratio on fraud indications in Sharia Bank. Thus, when the principle of Profit Sharing Ratio is dominant in Islamic banks, the fraud gets lesser. So, the hypothesis proposed in this study is:

H_4: Profit Sharing Ratio has a negative effect on fraud in Sharia Banks

2.6 The Effects of Islamic Corporate Governance on Fraud

The operation of Sharia Banks as a financial institution based on Islamic principles becomes a demand for Sharia Banks in implementing good corporate governance and following Islamic corporate governance. Islamic banks have a higher management risk if compared to Conventional Banks. Thus, a management that is per Islamic principles requires prudence of its business carriers (Hardianto & Wulandari, 2016). By implementing Islamic Corporate Governance, it should be an added value to Sharia banks in giving indications and impressions to the public that Islamic institutions, especially Sharia banks, are safer and more eager to avoid cheating practices, even though fraud can occur anywhere (Mahmood & Islam, 2016). This is supported by research Haifa & Rini, (2016) that said if fraud can occur due to a lack of proper management. Sharia banks are obliged to adhere to sharia principles in carrying out their business and are expected to minimize fraud. According to Abdi (2017) and Ansori (2014), good corporate management negatively affects internal fraud. The Islamic Corporate Governance Model, if implemented properly, will have an impact on reducing the level of fraud in Sharia Banks (Yusuf, Ahmad, & Razimi, 2016). So, the hypothesis proposed in this study is:

H_5: Islamic Corporate Governance negatively influences fraud on Sharia banks.

3. DATA AND METHODS

3.1 Study Characteristics

According to Sugiyono (2016), research is a scientific process of data collection and analysis using scientific methods that are carried out systematically and logically with specific purposes. This study uses a quantitative method, a method that uses data in the form of numbers (statistics) or can be in the form of qualitative data that is converted into numbers (scoring).

The independent variables in the first regression equation are Islamic Income Ratio and Profit Sharing Ratio with Islamic Corporate Governance as the dependent variable. The independent variables in the second regression equation are Islamic Income Ratio, Profit Sharing Ratio, and Islamic Corporate Governance with an indication of the fraud occurrence as the dependent variable.

3.3 Population and Sample

In this study, the population is all Islamic Commercial Banks registered with the Financial Services Authority (Otoritas Jasa Keuangan) in the 2016-2020 period. Moreover, the sample is Sharia Bank registered with the Financial Services Authority for the 2016-2020 period which was selected by meeting the sample requirements using a purposive

Table 1 Sampling Criteria,

No.	Criteria	Quantity
1	Registered Sharia Banks in Financial Services Authority 2016–2020.	13
2	Sharia Banks with consistent GCG report and annual report (2016–2020)	(0)
3	Sharia Banks with unpublished GCG and annual report but have complete required data (2016–2020)	(2)
4	Sample quantity of Sharia Bank	11
5	Study ample quantity (11 x 5)	55

Source: Processed data by author 2021.

Table 2 Descriptive Statistic Analysis of the Data Ratio.

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Islamic Income Ratio	55	.561	.997	.91880	.09385
Profit Sharing Ratio	55	.007	1.00	.45307	.28063

Source: Processed data by author 2021.

sampling technique. Purposive sampling or judgment sampling is a sampling technique that is based on certain criteria (Sugiyono, 2016). The criteria for sampling in this study are as follows:

3.4 Data Analysis Technique and Hypothesis Testing

According to Sugiyono (2016) data analysis techniques act as quantitative data processing. In quantitative research, the characteristics of the sample in proportion, percent, or mean and standard deviation are described by the authors. Estimation of the strength of variable relationships and statistical hypothesis testing is also conducted by authors. In this study, panel data regression analysis and logistic regression analysis were used.

3.5 Panel Data Regression Analysis

According to Basuki & Prawoto (2016) panel data regression is a combination of cross-section data and time-series data. The first equation model in this study has 2 independent variables: Islamic Income Ratio and Profit-Sharing Ratio, and a dependent variable: Islamic Corporate Governance. The panel data regression formula is as follows:

$$ICG = \alpha + \beta 1IIR + \beta 2PSR + e$$

Information:
ICG : *Islamic Corporate Governance*
α : Constants
ß1ß2 : Regression Coefficient
IIR : *Islamic Income Ratio*
PSR : *Profit Sharing Ratio*

3.7 Logistic Regression Analysis

According to Sekaran & Bougie (2017), logistic regression as a mathematical model approach that can be used as a description of the relationship between several independent variables and a bound variable consists of two categories. Because the dependent variable is of two categories (fraud and not fraud) leaves the logistic regression analysis as the most appropriate to be used in the second research model. Essentially, the logistic regression analysis holds the same principle as discriminant analysis, but the difference lies in the type of data from the dependent variable (Siyoto & Ali, 2016). Besides, the purpose of using logistic regression is to predict the size of the dependent variable in the form of a binary or dummy variable. The equation form of logistic regression according to Ghozali (2013) is as follows:

$$\text{Ln} = \frac{FD}{1-P} = a + ß1IIR + ß2PSR + ß3ICG + e$$

Where :

$\text{Ln} = \frac{FD}{1-P}$: fraud committed in the Sharia Banks
a : Constant
ß1ß2ß3 : Regression Coefficient
ICG : Islamic Corporate Governance
IIR : Islamic Income Ratio
PSR : Profit Sharing Ratio

4. RESULTS

The Sharia compliance variables characterized by Islamic Income Ratio and Profit Sharing Ratio hold a ratio scale data that can go through descriptive analysis using two variables to find

mean, standard deviation, minimum point, and maximum point. Based on table 2, the results of descriptive statistical analysis show that the Islamic Income Ratio variable has the lowest and the highest value of 0.561 and 0.997, respectively. Besides, it has the mean or average and the standard deviation of 0.91880 and 0.09385, respectively. The average value which is greater than the standard deviation indicates that the Islamic Income Ratio data is grouped and does not vary or does not spread far from the average.

The results of descriptive statistical analysis on the Profit Sharing Ratio variable shows the lowest and the highest values of 0.007 and 1.00, respectively. Whereas the average value and a standard deviation are 0.45307 and 0.28063, respectively. The greater average value compared with its standard deviation indicates that the Profit Sharing Ratio data does not vary or group.

Table 3 Islamic Income Ratio Percentage of Sharia Bank within the period of 2016-2020.

Islamic Income Ratio	Sample	Percentage
Mean (0.91880)	55	100%
Value above mean	36	66%
Value below mean	19	34%

Source: Processed data by author 2021.

Based on table 3, 2016 to 2020 data for 55 samples of Sharia Commercial Banks consists of 29 Sharia Banks (66% of Sharia Commercial Banks) showed an above-average value. This means that 36 out of 55 samples have performed their Islamic income ratios well or have complied with Sharia Bank principles by making more income based on sharia principles. The remaining 19 Sharia Commercial Banks, i.e. 34% Sharia Banks, are below the average. This means that there are 19 out of 55 samples shave not complied with sharia principles and there are still large amounts of non-halal income from their total revenues. However, comparing the above and below average samples of Islamic Income Ratio, it suggests that the above-average is superior. It can be concluded that the Private Sharia Banks' adherence to the principle is categorized as averagely good.

Table 4 Profit Sharing Ratio Percentage of Sharia Banks.

Profit-Sharing Ratio	Sample	Percentage
Mean (0.45307)	55	100%
Value above mean	27	49%
Value below mean	28	51%

Source: Processed data by author 2021

Based on the Table 4, 2016 to 2020 data for 55 samples of Sharia Commercial Banks consists of 27 Sharia Banks, i.e. 50% of Sharia Commercial Banks, showed an above-average value. It means that 27 out of 55 samples of Sharia Commercial Banks have complied with sharia principles by performing the financing based on profit sharing principles. While the remaining 28 Sharia Commercial Banks or 50% Sharia Banks are below the average. This means that there are 28 Sharia Commercial Banks out of 55 samples remains lack compliance or do not conduct financing based on the profit-sharing principle. Comparing the above and below an average sample of the the Profit-Sharing Ratio, it is evenly distributed. Thus, some private Sharia Banks have complied with sharia principles by financing implementation based on the profit-sharing principles, namely *mudharabah* and *musharakah* contracts. On the other hand, some private Sharia Banks have not complied with sharia principles by conducting financing based on the profit-sharing principle and channeling more funding with other contracts other than the profit-sharing principle.

Analysis of Descriptive Statistic of Islamic Corporate Governance

Table 5 Descriptive Statistic of Islamic Corporate Governance.

Criteria	Frequency	Percentage
Excellent	18	33%
Good	31	56%
Acceptable	6	11%
Jumlah	55	100%

Source: Processed data by author 2021.

Based on Table 5, Sharia Banks holds a excellent predicate with a total value of less than 1.5 for Islamic Corporate Governance from 2016 to 2020. It means that 18 of 55 samples or 33% of Sharia Banks have implemented Good Corporate Governance very well. Islamic Banks possessing excellent predicate includes Bank BCA Syariah, Bank Syariah Mandiri, and Bank Panin Syariah.

Islamic Banks with good predicate with a complete value of 1.5 to 2.5 are 31. It means that 31 out of 55 samples or 56% of Islamic Banks have implemented Good Corporate Governance well. Sharia Banks with good titles include BNI Syariah Bank, BRI Syariah Bank, Mega Syariah Bank, BTPN Syariah Bank, and Bukopin Syariah Bank. Then the Sharia Banks with acceptable predicate with a value of 2.5 to 3.5 are as many as 6. It means that 6 out

of 55 samples or 11% of Sharia Banks are acceptable in implementing Good Corporate Governance. Sharia banks with acceptable titles include Bank Muamalat, Maybank Syariah and Bank Victoria Syariah. Besides, there are no Sharia Banks with the predicate of bad or having a value of more than 3.5. It means that in this study, there is no Sharia Bank with the title "Bad" or "Very Bad" in the implementation of Islamic Corporate Governance. In this study, from 55 samples of Sharia Banks in the 5 years of the study period, the average Sharia Banks had a value of 1.5 to 2.5. Specifically, it is as many as 31 out of 55 samples or 56%, meaning that more Sharia Banks with Islamic Corporate Governance were categorized as "Good".

4.1 Descriptive Statistic Analysis on the Fraud Occurrence Indications

Table 6 Descriptive Statistic Analysis on the Fraud Occurrence Indications.

Criteria	Frequency	Percentage
Non-*Fraud*	21	38
Fraud	34	62
Total	55	100

Source: Processed data by author 2021.

Table 6 shows that in the variable indication of fraud from 55 samples of Islamic Banks, as many as 21 samples or 38% did not indicate fraud. During the 5 year study period of Sharia Banks, a fraud was not spotted including BCA Syariah Bank (2016 to 2020), BTPN Syariah Bank, Bukopin Syariah Bank, and Maybank Syariah (2016 to 2017), and BNI Syariah Banks (in 2020). Whereas 34 samples or 62% were indicated as committed a cheat or indicated fraud. The number of companies indicated by fraud indicates that the internal control in the Islamic Banks is not robust enough. Also, it means that more Sharia Banks have ever indicated fraud. Based on data for 5 years of the study period, fraud cases at Islamic Banks occurred more prevalently at Bank Muamalat. In the last two years, there have been 83 and 35 cases of fraud committed by permanent employees in 2019 and 2020, respectively.

4.2 Regression Analysis of the Data Panel

Table 7 Determination Coefficient.

Model	R	R Square	Std. Error of the Estimate
1	.122[a]	.15	.59613

Courtesy: Output SPSS data.

Table 7 shows that the R Square value of 0.15 is obtained. This can be interpreted that the combination of Sharia Compliance which is indicated by the Islamic Income Ratio and Profit Sharing Ratio, has a positive influence on the Islamic Corporate Governance variable by the amount of 15%. While 85% of Islamic Corporate Governance variables are influenced by other factors.

Table 8 The Effects of Partial Variable Testing

		B	S.E.	Sig.
Step 1[a]	ICG	1.324	,836	,051
	IIR	-20.385	3,269	,059
	PSR	-1,324	1,662	,368
	Constant	1,404	3,436	,683

Source: SPPS output from processed data.

As shown in Table 8, the Islamic Corporate Governance coefficient is 1.324 with 0.051 significance. Thus, Islamic Corporate Governance has no significant effect on fraud indication in Sharia Bank. Islamic Income Ration coefficient is -20.385 with 0.059 significance so that Islamic Income Ratio also has no significant effect on fraud indication in Sharia Bank. Furthermore, the Profit Sharing Ratio coefficient is -1.324 with 0.368 significance, so it has no significant effect on fraud indication in Sharia Bank.

4.3 The Effect of Islamic Corporate Governance on Fraud Indication

Logistic regression testing on Islamic Corporate Governance shows that the significance value is 0.051. The significance value that is greater than 0.05 resulted in the rejection of H_1 hypothesis. Thus, could be said that Islamic Corporate Governance partially has no effect on fraud indication.

Table 9 ICG on Fraud Indication

Description	Fraud Indicated		Not Fraud Indicated		Total
	n	Percentage	n	Percentage	
ICG higher than the average (>1,89)	22	73%	8	27%	30
ICG lower than the average (<1,89)	6	43%	8	57%	14
Total	28		16		55

Source: Processed data, 2021.

However, based on this research, the Sharia Bank has a complicit value of 1.5-2.5 with 1.89 as the average. All of 55 samples, 30 of them have higher than the average

value while the rest of them have lower than the average value. From the 30 aforementioned, 22 samples (73%) have fraud indication, and the other 8 (27%) have no fraud indication. In line with the theory, the higher the complicit value, the more fraud will be indicated. Whereas from 14 samples with lower than the average value (<1.89), 6 of them have fraud indication and the other 8 have no fraud indication. Complicit value of <2.5 shows the excellency of management in Sharia Bank. From Table 9, banks with good or very good management systems are still having fraud indication, both from higher or lower than the average category.

The Effects of Islamic Indocme Ration on Fraud Indication

Logistic regression result of the Islamic Income Ratio shows the significance of 0.059. If the value is higher than 0.05, the H_2 hypothesis is rejected. Thus, the Islamic Income Ratio partially does not affect fraud Indication.

Table 10 Islamic Income Ratio (IIR) on Fraud Indication.

Description	Fraud Indicated		No Fraud Indicated		Total
	n	Percentage	n	Percentage	
IIR higher than the average	16	56%	13	44%	29
IIR lower than the average	12	80%	3	20%	15
Total	28		16		55

Source: Processed data, 2021.

Based on research (Marheni, 2017), when Islamic Income Ration is high and the fraud indication is low, it means that the Sharia Bank already executed the Sharia principle. However, in this study in Table 14, Sharia Bank with fraud indications mainly comes from the group with IIR higher than the average. From 29 samples with IIR higher than the average, as many as 16 samples (56%) have fraud indication and the other 15 samples (44%) have no fraud indication. Thus, although the Islamic Income Ratio is well implemented, there is no indication that Sharia Bank is clear from fraud. This also shows that income activity with the Sharia principle has no effects on fraud. This study is aligned with another study (Haifa & Rini, 2016), which has a similar result that there is no effect of Islamic Income Ration on fraud.

The Effects of Profit-Sharing Ration on Fraud Indication

Logistic Regression test of Profit-Sharing Ration shows the significant value as high as 0.368. The higher significance value than 0.05 means that H_3 hypothesis is rejected. Therefore, partially, the Profit Sharing Ratio has no significant effect on fraud indication in Sharia Banks.

Table 11 Profit-Sharing Ratio (PSR) on Fraud Indication.

Description	Fraud Indicated		No Fraud Indicated		Total
	n	Percentage	n	Percentage	
PSR higher than the average	11	50%	11	50%	22
PSR lower than the average	17	77%	5	23%	22
Total	28		16		55

Source: Processed data, 2021.

From Table 11, the amount is the same for both of the groups with PSR higher and lower than the average. But, from 22 samples with IIR lower than the average, as many as 17 samples (77%) have fraud indication. Therefore, Sharia Banks with PSR lower than the average is more likely to have fraud indication. From 28 samples of Sharia Banks with fraud indication, as many as 11 samples came from PSR higher than the average group. However, from 16 samples with no fraud indication, 11 of them have PSR higher than the average. From those data, could be concluded that the level of PSR of Sharia Bank does not affect its fraud indication, with the proof from Table 11 that both groups with PSR higher and lower than the average have fraud indication.

Tabel 12 Path Analysis of Direct and Indirect Effect.

Variable	Direct	Indirect	Total
X1 --> Y	0.480		
X2 --> Y	0.136		
X1 --> Z	-20.385	0.636	-19.749
X2 --> Z	-1.324	0.180	-1.155
Y ---> Z	1.324		

Source: Processed data, 2021.

From the path analysis result above, attained that the direct effect of Islamic Income Ration on fraud is -20.385 that is greater than its indirect effect of 0.636. However, the direct coefficient of Profit-Sharing Ratio on fraud is -1.324 that is greater than its indirect coefficient of 0.180. These data reveal that Islamic Corporate Governance is not an intervening variable which correlate Islamic Income Ration and Profit Sharing Ration on fraud indication.

5. CONCLUSIONS AND IMPLICATION

From the descriptive analysis, Islamic Corporate Governance from Common Sharia Banks from 2016-2020 has the complicit average value within the "Good" category. Thus, there were more Sharia Bank with good Islamic Corporate Governance implementation. The Sharia Banks that possess the highest complicit value or "Very Good" are BCA Sharia Bank from 2016-2020 and Mandiri Sharia Bank from 2016-2020. The other Sharia Bank with the "Rather Good" category is Muamalat Bank from 2016-2020. Moreover, Sharia Compliance with Islamic Income Ratio proxy in Sharia Banks from the 2016-2020 period, there was 29 out of 55 banks have higher than the average. Thus, more Sharia Bank has implemented its Islamic Income Ration or already following the sharia principle by focusing on Islamic income and reducing usury. The average Islamic Income Ratio is lower than its deviation standard, which means that the data are clustered and not far-placed from the average. On the other hand, Sharia Compliance with Profit Sharing Ration proxy on Sharia Banks from 2016-2020; there were equally 22 banks with lower and higher than the average value out of 55 samples. These data depict that Sharia Banks is not stern on sharia principles in terms of profit-sharing budgeting and not implementing maximum profit sharing. The average of Profit-Sharing Ratio is lower than its standard deviation, which means that the data is not varied and not scattered away from its average.

On fraud indication on Sharia Banks from 2016-2020, there were 28 out of 55 samples have fraud indication. The other 16 have no fraud indication, and they are BCA Sharia Bank from 2016-2020, BTPN Sharia Bank from 2016-2020, Bukopin Sharia Bank from 2016-2017, Maybank Sharia from 2016-2017, BNI Sharia Bank on 2020, Victoria Sharia Bank and Panin Sharia Bank on 2016. Simultaneously, Islamic Corporate Governance and Sharia Compliance with Islamic Income Ratio proxy are affecting fraud indication. Islamic Corporate Governance is partially affecting fraud indication on common Sharia Bank with positive direction. Sharia compliance with Islamic Income Ratio proxy is partially not affecting fraud indication on Sharia Banks. Sharia compliance with Profit Sharing Ratio is partially affecting fraud indication on Sharia Bank in a negative direction.

Based on *Cox and Snell R Square* dan *Nagelkereke R Square* testing, the value of *Nagelkerke R Square* is 0.35, which means that the combination of Islamic Corporate Governance and Sharia Compliance with Islamic Income Ration and Profit Sharing Ratio proxy are capable to explain the detection of variable on fraud indication as much as 35%. The other 65% is explained by other factors than in this study. Thus, future studies expected to add other independent variables, for instance, the sharia compliance with Islamic investment ratio or Zakat ratio proxy. Moreover, more samples also expected since this study is focused on Sharia Banks thus resulting in sample limitation. From the result of this study, the complicit value could be used as consideration for customers to decide where to trust their possession. For Sharia Bank whose goals are improving market share and garnering customers, it is integral to pay attention to factors than affect fraud, since Sharia Bank has a strength that should be potential if managed properly. Not to mention in the country with a predominantly Muslim country such as Indonesia. Sharia Bank should pay attention more to sharia principles that could affect fraud indication like Profit Sharing Ratio. Since by abiding the sharia principles embedded with proper management, Sharia Bank could reduce the fraud potential.

REFERENCES

Abdi, S. (2017). Pengaruh Sistem Internal Kontrol, Audit Internal Dan Penerapan Good Corporate Governance Terhadap Kecurangan Perbankan (Studi Kasus Pada Bank Syariah Anak Perusahaan BUMN Di Medan). *Riset & Jurnal Akuntansi*, *1*.

Alhammadi, S., Archer, S., Padgett, C., & Abdel Karim, R. A. (2020). Perspective of corporate governance and ethical issues with profit sharing investment accounts in Islamic banks. *Journal of Financial Regulation and Compliance*, *26*(3), 406–424. https://doi.org/10.1108/JFRC-01-2017-0014

Ansori. (2014). Implementasi Islamic Corporate Governace dan Implikasinya terhadap Kinerja Bank Syariah. *Jurnal Dinamika Akuntansi*, *6*(1).

Basuki, A. T., & Prawoto, N. (2016). *Analisis Regresi Dalam Penelitian Ekonomi & Bisnis: Dilengkapi Aplikasi SPSS & EViews*. Depok: Rajagrafindo Persada.

Ghozali, I. (2013). *Aplikasi Analisis Multivariate Dengan Program IBM SPSS 21 Update PLS Regresi* (7th ed.). Semarang: Badan Penerbit Universitas Diponegoro.

Haifa, N., & Rini. (2016). Sharia Compliance, Islamic Corporate Governance Dan Fraud Pada Bank Syariah. *Jurnal Akuntansi Dan Keuangan Islam*, *4*(2), 131–146.

Hardianto, D. S., & Wulandari, P. (2016). Islamic bank vs conventional bank : intermediation , fee based service activity and efficiency. *International Journal of Islamic and Middle Eastern Finance and Management*, *9*(2). https://doi.org/10.1108/IMEFM-01-2016-0003

In'airat, M. (2016). The Role of Corporate Governance in Fraud Reduction–A Perception Study in the Saudi Arabia Business Environment. *Journal of Accounting and Finance*, *15*(2), 119–128.

Ismail, T. H., & Zakia, A. (2013). Stock option fraud prevention in Islamic country : does corporate governance matter ? *Journal of Financial Reporting and Accounting*. https://doi.org/10.1108/JFRA-03-2013-0013

Kementrian Hukum Dan HAM. Undang Undang Nomer 21 Tahun 2008 Tentang Perbankan Syariah (2008).

Lidyah, R. (2020). Islamic Corporate Governance, Islamicityfinancial Performance Index And Fraudat Islamic Bank. *Jurnal Akuntansi*, *22*(3), 437. https://doi.org/10.24912/ja.v22i3.398

Lutfinanda, A., & Sinarasri, A. (2013). Analisis Pengaruh Pengungkapan Syariah Complience Terhadap Kepatuhan Perbankan Syariah Pada Prinsip Syariah (Studi Kasus : di BPRS Kota Semarang). *MEDIA AKUNTANSI UNIMUS*, *4*(1).

Mahmood, R., & Islam, M. (2016). Practices of Corporate Governance in the Banking Sector of Bangladesh. *International Journal of Managing Value and Supply Chains*, *6*(3), 17–29. https://doi.org/10.5121/ijmvsc.2016.6302

Marheni. (2017). Analisis Kepatuhan Prinsip-prinsip Syariah terhadap Kesehatan Finansial dan Fraud pada Bank Umum Syariah. *Jurnal Ilmu Syari'ah Dan Perbankan Islam*, *2*(1), 143–170.

Meilani, S. (2016). Hubungan Penerapan Good Governance Business Syariah Terhadap Islamicity Financial Performance Index Bank Syariah Di Indonesia. *Athenea Digital*, (18), 85–90.

Mohamed I, E., Cholins G, N., Opong, K. K., & Avison, L. (2017). Corporate Governance, Islamic Governance and Earnings Management in Oman. *Journal of Accounting in Emerging Economies*, *7*(June). https://doi.org/10.1108/JAEE-09-2016-0064

Nelson, T. (2014). *Surat Edaran Otoritas Jasa Keuangan 10/SEOJK.03/2014 Tentang Penilaian Tingkat Kesehatan Bank Umum Syariah dan Unit Usaha Syariah*. Jakarta.

Otoritas Jasa Keuangan. (2019). Snapshot Perbankan Syariah 2019.

Rahmayani, & Rahmawaty. (2017). Pengaruh Islamic CorporateRahmayani, & Rahmawaty. (2017). Pengaruh Islamic Corporate Governance dan Internal Control Terhadap Indikasi Terjadinya Fraud Pada Bank Umum Syariah Di Indonesia. Jurnal Ilmiah Mahasiswa Ekonomi Akuntansi, 2(3). Retrieved from ht. *Jurnal Ilmiah Mahasiswa Ekonomi Akuntansi*, *2*(3). Retrieved from http://www.jim.unsyiah.ac.id/EKA/article/view/4395

Sapuan, N. M., Sanusi, N. A., Ismail, A. G., & Wibowo, A. (2016). Social learning and principal-agent problems in profit sharing contract. *Humanomics*, *32*(4), 498–515. https://doi.org/10.1108/H-08-2016-0064

Sekaran, U., & Bougie, R. (2017). *Metode Penelitian untuk Bisnis* (6th ed.). Jakarta: Salemba Empat.

Sitti, J. (2016). Pengaruh Good Corporate Governance Terhadap Pencegahan Fraud Di Bank Perkrediatan Rakyat (Studi Pada Bank Perkreditan Rakyat Di Surabaya). *AKRUAL Jurnal Akuntansi*, *7*(2), 177–191.

Siyoto, S., & Ali, S. (2016). *Dasar Metodologi Penelitian*.

Sugiyono. (2016). *Metode Penelitian Kuantitatif, Kualitatif dan R&D*. Bandung: Alfabeta.

Yuli, F. (2020). Bank Syariah Mandiri Diduga Beri Pembiayaan Fiktif Rp 1,1 T. Retrieved January 23, 2019, from https://www.cnnindonesia.com/ekonomi/20200214172620-78-276222/bank-syariah-mandiri-diduga-beri-pembiayaan-fiktif-rp11-t

Yumna, A. (2019). Examining fi nancial needs of banking customers for product development in Islamic banking in Indonesia A Maslahah pyramid approach. https://doi.org/10.1108/IMEFM-11-2020-0378

Yusuf, A., Ahmad, U., & Razimi, M. (2016). A Conceptual Study on Islamic Corporate Governance Model in Curtailing Bank's Fraud. *International Journal of Economics, Finance and Management Sciences*, *4*(6), 357. https://doi.org/10.11648/j.ijefm.20160406.17

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How to improve the vision and competitive advantage of a new product by ICT and OLC?

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ABSTRACT Human resources and capital are the basis of any successful organization but nowadays, organizations that learn and are based on innovation are more successful. The purpose of this study is to investigate the impact of information and communication technology (ICT) on new product competitive advantage (NPCA) and new product vision (NPV) through the partial mediating role of organizational learning capability (OLC) by structural equation modeling (SEM). Iran's Automobile Industry was selected as the statistical population. The results show that ICT has a significant effect on OLC and OLC has a significant effect on NPCA and NPV, which indicates the indirect effect of ICT on NPCA and NPV and confirms the mediating role of OLC. ICT also has a significant direct effect on NPCA and NPV, which confirms the partial mediating role of OLC. Finally, NPCA and NPV can be improved through OLC by using and implementing ICT.

KEYWORDS: ICT, OLC, NPCA, NPV, SEM

1. INTRODUCTION

Great improvement in information and communication technology (ICT) and its widespread use is one of the characteristics of 21st century (UNCTAD, 2010). This improvement provided people with more possibilities and opportunities and increased their self-sufficiency. This technology also facilitated access and management of information and provided our ability in accessing knowledge and business opportunities worldwide (Fathi and Motlagh, 2010). Information and communication technology is an extensive domain that includes hardware (portable computers, computing technologies, automated event record tools), software (multimedia data sources) and information system technology (Intranet and Internet) (Brown and Maccormac, 2009). Information and communication technology has great potential in changing most common activities (Otieno, 2012). Prasad believes that information and communication technology is a tool for mass customization passed on customer demands, automation of the sales department, improving marketing decision-making systems and cooperation and communication with customers (Prasad et al., 2001). Many organizations are facing a competitive environment in which maintaining their competitive abilities is one of the main concerns (Knudsen et al., 2021). competitive advantage means a company has attained superior performance relative to other competitors (Lazzarini, 2015; Schilke, 2014; Kahupi et al., 2021) by for example achieving cost leadership or being differentiated in what it offers, or having developed a strategy that is value-creating and not being implemented by competitors (Barney, 1991). According to Nevo and Wade (2010) and Chatterjee (2021) value refers to the ability of a firm's resource to support strategies such as exploiting market opportunities; rarity refers to what extent a firm's resource is unavailable to competitors; inimitability relates to the costs and difficulties of duplicating the resource; and non-substitutability refers to the nonexistence of equivalent resources. Among the characteristics of a competitive environment are spread of novel technologies, quicker obsolescence or products and changes in customers' needs

(Knudsen et al., 2021). Managers also noticed that one of the sources of profit in organizations is their human resources. Therefore, organizations must provide a continuous stream of novel and innovative products and expand their markets in order to maintain their success which necessitates organizational learning (Gomes and Wojahn, 2017). Novel organizational approaches consider learning to be an organizational culture and seek to integrate personal, group and organizational learning. In this approach, in order to pay attention to external challenges and proper use of opportunities, an organization needs certain internal abilities and capabilities that use different styles of learning to acquire novel ideals from organization's environment and institutionalize these ideas in the organization (Ashton and Thorn, 2007). The concept of organizational learning capability emphasizes the importance of factors facilitating learning or trend toward learning in the organization (Kalmuk and Acar, 2015). In fact, organizational learning capability shows the capacity for creating and implementation of ideas in order to deal with various organizational barriers using innovations and management methods (Nwankpa and Roumani, 2014). Organizational learning alone is not enough, but its ultimate goal of improving performance and gaining, maintaining and enhancing competitive advantage must be achieved. Organizational learning is an important and vital component for innovation through which a new product is developed (Sutanto, 2017). Before an organization can improve its innovation behavior, management must analyze the learning that is common in the organization (Petra et al., 2002). In fact, organizational learning has become an important strategy to create competitive advantage in organizations because qualified employees are considered valuable resources for the organization (Saro, 2007). Organizational learning can also help the organization to achieve its vision and performance goals (Gah, 2003). Therefore, it is important to pay attention to the concept of learning and measure its capability in organizations (Onağ et al., 2014). Innovation is possible by acquiring knowledge from various sources and applying it in the organization. Organizations therefore seek to enhance the performance of innovation by improving their knowledge base, by adapting to customer needs, and by rapid learning (Gilbert et al., 2007). In other words, this task requires flexible product development processes, the ability to acquire existing knowledge and competencies, and knowledge development, i.e. the concepts that underlie organizational learning capability. Based on this, it can be said that organizational learning is an important factor that can lead to the success of a new product (Callanton, 2002). Organizations must cope with an increasingly changing environment. Such a change derives essentially from the evolution and changes in customers' needs, technological advances to satisfy those needs and the evolution in business management (Lee et al., 2013). Therefore, the business ability to build and defend a competitive position in the market depends to a great extent on the capacity to invest and use information (Weber and Kantamneni, 2002; Mithas and Rust, 2016). In this regard we can consider information technology to be a key factor for the organization's success. The literature considers information technologies to be an important source of competitive advantages for the company (Gil-Saura et al., 2009; Amuna, 2017). ICT industry plays an essential role in most countries (Ministry and Pitner 2014; Talib et al. 2013). ICT industry can be classified into ICT manufacturing and ICT service. In both sectors, various fields of related technologies may emerge and provide products and services with new functions and values. Unlike other industries, ICT-based industries show the most diverse characteristics of convergence (An et al. 2016). ICT industry leads to sustainable national competitiveness because it creates greater linkage effects than any other industry and accelerates innovation in related sectors (Xing et al. 2011). For this reason, the ICT industry plays a pivotal role in increasing the productivity of the entire economy (Asikainen and Mangiarotti 2017). Given that the Automobile Industry has a vital role in the economic development of a country and is considered as one of its economic infrastructures, Iran also seeks to become strong in this industry. Given that Automobile Industry in Iran is developing, this industry seeks to increase its market share, especially in the Middle East, by launching new products. In this regard, paying attention to factors such as vision and competitive advantage in new products can lead to the growth of this industry. For this reason, the Automobile Industry in Iran has been studied. On the other hand, so far no research has been done on the role of information and communication technology and organizational learning capability in improving the new product vision and competitive advantage, and the present study will fill this gap. Accordingly, the purpose of this study is to investigate the effect of information and

communication technology on the new product competitive advantage and new product vision by considering the partial mediating role of organizational learning capability. The results of present research can help government or managers and contribute to future relevant researches.

2. LITERATURE REVIEW

2.1 Information and communication technology

At the start of the millennium, information and communication technology has affected the entire world and has changed the foundations of many systems (Jerez-Gomez, Céspedes-Lorente, and Valle-Cabrera, 2005). ICT is considered as a "major tool for building knowledge societies" (Sar and Misra, 2020). The ICT also stimulates initiative and creativity (Chai, Koh, and Tsai, 2010; ómez-Fernández and Mediavilla, 2021), enables individualization and flexibilization of education (Abell, 2006) and makes knowledge acquisition more accessible (Brush, Glazewski, and Hew, 2008). ICTs are an important part of every country's national infrastructure. Technological readiness refers to the speed with which an economy utilizes existing technologies to improve the productivity of its industries, with specific emphasis on utilization of ICTs in daily activities and production processes to achieve increased efficiency and competitiveness (Salehan, Kim and Lee, 2018). ICT profoundly affects economic and social development (Wang, Zhou, and Wang, 2021). Using information and communication technology in many aspects of human life had turned the world into what is known as an information society. The rapid emergence of modern ICT has substantially changed the type of skills that are needed to successfully participate, communicate, and work in a modern society (Gnambs, 2021). Today, access to internet and other information sources is increasing exponentially and all societies try to use these new technologies by creating the necessary infrastructures. ICTs may have promoted and advanced an individual's (and a community's) radicalization process (Parra, Gupta, and Mikalef, 2021). The application of ICT across different sectors of the global economy has become a game changer in boosting work efficiency and productivity (Ayisi Nyarko and Kozári, 2021). All experts and policy-makers state that information and communication technology creates great potential for social, financial, cultural and political development. To this end, many countries have defined specific strategies for development of information and communication technologies (Hennessy, Ruthven, and Brindley, 2005) and many nations consider ICT to be a strategic tool for improving welfare, wealth, equity and competitiveness (Sharifi et al., 2013). In new categorizations and definitions, countries with better access to information are considered to be wealthier. This means that today, the main power of countries is not based on polluting factories or destructive war machines but instead based on having access to more information in a timely manner (Pelgrum, 2001). In fact, ICT emphasizes the role of information and information processing, storage, transfer and retrieval facilities. It is worthy to note that other than communicative infrastructure, other forms of media such as radio and television also play important roles as information transfer channels (Colecchia and Schreyer, 2002). From another point of view, ICT is the set of tools, machines, know-how, methods and skills used in creating, trading, processing, retrieval, transfer and use of information and includes all levels of information processes from simplest to the most complex (Akshay and Dhirubhai, 2005). In general, ICT is the use of information management tools services used for creating, processing, storage, distribution and transfer of information (Rama Rao, 2004). Studies show that one of the factors separating organizations from each other is information technology and the extent of its use in them. Many factors affect the use of ICT in organizations (Alexandru, 2006) some of which are investigated in this study which include the following factors: Personal factors (Hosnat, 2008; Mirghani et al., 2010); Attitude factors (Alam Beigi et al., 2009; Mooij and Smeets, 2005); Training factors (Alam Beigi et al., 2009); Economic factors (Allan, Yuen, and Wong, 2009); Environmental factors (Khuong, 2008); Human and managerial factors (Ruiz-Molina et al., 2015).

2.2 Organizational learning capability

Organizational learning is a process through which organizations learn new information. According to experts, organizational learning is an essential process for every organization in today's competitive environment and is the sum of all organizational and management characteristics that facilitates learning in

the organization (Fernández-Mesa and Alegre, 2015; Sutanto, 2017). Many experts state that there is no consensus about measures of organizational learning; this is mostly due to the fact that organizational learning is the result of several stages, each with its own measures of success (Birchall and Giambona, 2010). The concept of organizational learning emphasizes the importance of factors facilitating the natural inclination or tendency of the organization toward learning (Goh, 2003; Nwankpa and Roumani, 2014). An organization's learning capacity is one of its organizational and management characteristics and defines the conditions in which it is possible for the organization to learn (Alam Beigi et al., 2009). It can be said that factors facilitating learning in an organization are the same as measures of its learning capacity. The learning capacity of an organization is the result of individual and group learning in the organization, carried out in order to reach the organizational goals. Specific management actions or conditions can facilitate or hinder this process. Therefore, if one can determine the management actions that facilitate learning (Nwankpa and Roumani, 2014), then it is possible to measure the organization's learning capacity. This information can help managers focus on efforts that facilitate organizational learning (Chiva, Alegre and Lapiedra, 2007). Organization's learning capacity is the intrinsic ability of the organization in creating, developing and use of new knowledge in order to compete with its competitors and is in fact difficult to implement (Jerez-Gomez, Céspedes-Lorente, and Valle-Cabrera, 2005). In order to create the capacity to learn in an organization it is necessary to have an effective innovation process through activities such as experimentation, constant improvement, team work and group problem solving, observing the activities of other employees and Participatory decision-making (Goh, 2003). In his study, Chiva (2004) tried to determine the factors facilitating organizational learning. In this later work, Chiva et al. (2007) developed their measurement tool for organizational learning capacity and determined that organizational learning has several dimensions including 1-Experimentation, 2-Rrisk-taking (Jerez-Gomez, Céspedes-Lorente, and Valle-Cabrera, 2005), 3-Interaction with external environment (Chiva, Alegre and Lapiedra, 2007), 4-Dialogue (Chiva, Alegre and Lapiedra, 2007) and 5-Participatory decision-making (Bapuji and Grossan, 2007; Scatt-ladd and Chan, 2004).

2.3 New Product Competitive Advantage

Competitive advantage of a firm serves as a pivotal determinant to its performance and survival(Barnett & McKendrick, 2004; Barney, 2001; Leiblein et al., 2017). How firms obtain and sustain competitive advantage is the fundamental question (Wang and Gao, 2021). firms must consider decisive factors that may enable firms to create unique competitive advantages in terms of product image, sales, market share, and new market opportunities (Liao, Kuo, and Ding, 2017). According to the Resource-based View (RBV) theory, a firm's competitive advantage is attributable to the valuable and rare resources that it currently possesses (Cao et al., 2021); firms sustain their competitive advantage provided that the resources are non-tradable or imitated by other firms (Barney, 1991; Barney and Clark, 2007; Chadwick et al., 2015). Globalization of markets, development of dynamic technologies, shortening of product life cycle and rapid changes in customer demands; All of this means that companies' competitiveness strongly depends on their ability to meet customer demands and needs by creating more value in products and services. These forces companies to upgrade their ability and capacity to create and deliver value to stakeholders, especially customers. In dynamic global markets, companies face varying degrees of competition. Rapid technological changes, shortening the product life cycle, and the increasing complexity of technology have forced companies to outsource their technical development (Banrent and Tishirki, 2004). In a product development environment with new technology, decision making is difficult due to complexity and uncertainty. Competitive advantage includes strategies that companies use to perform better than competitors in product markets. The environmental competitive advantage can be further categorized into cost and differentiation advantage (López-Gamero et al., 2016; Miotto et al., 2020). Organizations can gain competitive advantage if they can create value for customers. Launching new products is one of the strategic sources of value creation (Miles and Covin, 2000; Walsh and Dodds, 2017). So the competitive advantage of a new product is actually the advantage that the new product has over the competitors' products. Competitive advantage requires companies to have particular control over production costs to ensure that their products are priced competitively. Dunk (2004) showed that competitive

advantage has a positive role on the extent to which organizations use the cost of product life cycle. Organizations will have a competitive advantage when they produce and deliver their goods and services better than competitors. In this study, the competitive advantage of the new product is measured by following the research of Singh and Sang (2007) with seven indicators.

2.4 New Product Vision

Shared vision is defined as the members' collective value and beliefs regarding a firm's objectives and mission (Oswald et al., 1994). Proactive Environmental Strategy (PES) entails organizational members' support, involvement and commitment in attaining sustainability goals of an organization (Albertini, 2019; Journeault 2016). Thereby, shared vision is critical in fostering employees' participation and commitment in environmental decision making and actions (Aragón-Correa et al., 2013; García-Morales et al., 2011). It facilitates effective communication of sustainability-integrated goals, strategies, practices and technologies among organizational members (Johnson, 2017) and develops a sense of collectivism and a sustainability-driven working culture (Ketprapakorn and Kantabutra, 2019). In addition, it provides goal clarity and strategic directions by mitigating ambiguities and conflicting interests (Alt et al., 2015). According to the above description, it can be expressed that the new product vision is in fact a goal and strategic direction that is considered for the product launched to the market. Vision requires analyzing the future markets, the sector and industry in which the company competes, and how to create value for future customers. All of these factors set the company apart from its competitors (Abel, 2006). In new organizations, psychological differences between departments affect the performance and development of a new product. For example, if a subsidiary feels that the parent company has a clear picture of a common goal, then it will perform better in competition. The new product vision creates a psychologically safe work environment for teams and also clearly explains development goals to members. Lane and Akgon (2001) define the product vision as collaboration and support for the group's clear and sustainable goals. Organizations and their internal departments, with a particular insight into customers and market situations, have to interact with and coordinate with external marketing trends, especially when products and systems require specific modifications. All members of the new product development team must have the same vision for the product so that they can create a kind of synergy between different departments and organizations. In modern business environments, the success of new product development depends on collaboration between suppliers, research and development, production, sales, marketing, sales channels, and management support (Chen and James Lane, 2011). In this study, the new product vision is measured by following Tsarola's (2007) research with three indicators.

3. FRAMEWORK AND HYPOTHESES DEVELOPMENT

Figure 1 shows the conceptual framework of this study which is investigated in the following hypotheses.

3.1 ICT and OLC

Information technologies have improved knowledge sharing, and speed up the flow of information and communication. In addition, the continuous development of information technologies constantly poses new challenges for people so that they improve, learn and adapt. Information technologies significantly affect the communication within an organization, and communication plays a significant role in all organizations (Mitić et al., 2017). Companies need to invest in organizational learning, and master the capabilities of knowledge generation, appropriation and exploitation. Learning has become valuable because knowledge is an important resource (Mai, Do and Phan, 2022; Canbaloğlu, Treur and Roelofsma, 2022). Productivity and competitiveness are a function of knowledge generation and information processing and so modern information and communication technology (ICT) acts as a catalyst in organizational learning (Altınay, Dagli, and Altınay, 2016). According to Teece (2000), ICT might support knowledge-sharing. Consequently, technology is important for facilitating knowledge-sharing between organization members. Knowledge-sharing can be neither forced nor controlled (Hortovanyi and Ferincz, 2015). One of the biggest challenges for managers wishing to help their organization become a learning one is to find ways to encourage members to share and transfer their knowledge (Bock et al., 2005). According to

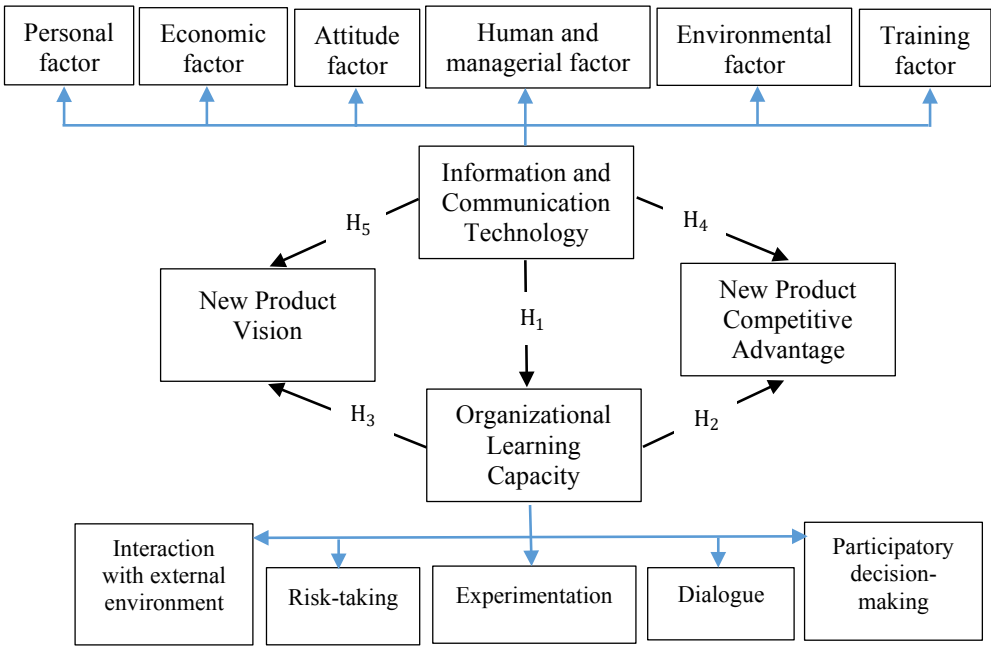

Figure 1 Conceptual Framework.

Dewett and Jones (2001), information technology can help organizations to be more efficient and innovative by making knowledge "visible" and accessible; encouraging sharing and application of the stored knowledge and finally; and providing a mechanism that is efficient and effective to dismantle communication barriers across space and time. Also Van den Hooff and de Ridder (2004) emphasized that the use of IT systems influences the knowledge transfer process. Technology can play a central part in providing the media and infrastructure for learning in and between knowledge communities. They identified a context supportive of learning and knowledge transfer and integrated ICT development and usage as key characteristics of a successful knowledge community. Bennet and Shane Tomblin (2006) emphasized that organizational learning is also concerned with knowledge and the use of ICT helps modern organizations respond faster, be more efficient, be better coordinated, and create more and varied links between human and knowledge resources in modern OL and KM efforts. Based on the discussion above, this study offers the following hypothesis.

Hypothesis 1 Information and communication technology affects organizational learning capability.

3.2 OLC and NPCA

The results of studies on organizational learning show that learning capabilities can lead to competitive advantage (Gah and Ryan, 2008) and organizational learning capabilities are in fact a set of organizational and managerial characteristics that, Facilitates the organizational learning process and allows the organization to learn and play a vital role in the learning process (Chiva et al., 2007). In today's global marketplace, maintaining a competitive position is a constant concern. Technological innovations and economic uncertainty have changed the face of competition and made the survival of organizations dependent on the competitive advantage of their new products (Isper et al., 2007). For this reason, organizations should seek to ensure the competitive advantage of their new products by learning and acquiring new knowledge of the environment (Winklen, 2010; Onağ, Tepeci, and Başalp, 2014). Based on the discussion above, this study offers the following hypothesis.

Hypothesis 2 Organizational learning capability affects new product competitive advantage.

3.3 OLC and NPV

Companies are looking for ways to reduce product development time while at the same time developing quality and reducing costs (Yeh et al., 2010). New product development is a strategic and key activity for many companies through which new products will have a significant share in sales and profits (Kaftros et al., 2005). In fact, new products are an important factor for the success of organizations in the market (Gonzalez and Palacios, 2002). More

organizational learning capability can increase the possibility of providing a clear statement of objectives along with the mechanism of providing a path for the rapid development of new products in the form of product vision (Winklen, 2010). Based on the discussion above, this study offers the following hypothesis.

Hypothesis 3 Organizational learning capability affects new product vision.

3.4 ICT and NPCA

Technology, defined as 'know-how', has been recognized as a primary driver of competitive advantage (Chadee and Kumar, 2001). ICTs are an important part of every country's national infrastructure (Salehan, Kim and Lee, 2018). ICT related research has suggested that information processing capability is associated with firm performance (Wang, 2003). Information processing capability as an essential component of company's ICT has a significant effect on company performances (Premkumar et al., 2005; Wang et al., 2013) and asset productivity and business growth (Chen et al., 2015). Recently, practice-oriented research suggests that information processing capability based on business analytics is likely to help companies to gain competitive advantage (e.g. Davenport et al., 2001; Kiron & Shockley, 2011; Kiron et al., 2012; Cao et al., 2019). Nevertheless, a direct link between ICT-related capability and competitive advantage seems highly plausible and has been supported by a number of studies underpinned by the RBV in a variety of research areas (e.g. Bharadwaj, 2000; Barua et al., 2004; Mithas et al., 2012). For example, Collins and Clark (2003) show that a company's information capability affects its competitive advantage in American high technology companies; Sook-Ling, Ismail, and Yee-Yen, (2015) demonstrate that information processing capability is positively related to competitive advantage while Lim, Stratopoulos, and Wirjanto, (2012), based on a sample of large US firms, show that senior IT executives help develop superior IT capability, which in turn has a positive impact on competitive advantage. Gunasekaran, Subramanian and Papadopoulos (2017); Saeidi et al. (2019) and Mao et al. (2016) also state that information technology can lead to a competitive advantage. Also competitive advantage requires companies to have particular control over production costs to ensure that their products are priced competitively (Liao, Kuo and Ding, 2017). Technological readiness refers to the speed with which an economy utilizes existing technologies to improve the productivity of its industries, with specific emphasis on utilization of ICTs in daily activities and production processes to achieve increased efficiency and competitiveness (Salehan, Kim and Lee, 2018). Also, according to Cao et al. (2021) competitive advantage can be achieved by introducing new technology-based products. Based on the discussion above, this study offers the following hypothesis.

Hypothesis 4 Information and communication technology affects new product competitive advantage.

3.5 ICT and NPV

Over the last decade, competition has intensified and companies have found the need to restructure and improve their business practices to find new and more efficient ways to obtain competitive advantage in order to survive. In this context, ICT offers benefits for a wide range of business processes and improves information and knowledge management within the firm, leading to better performance (Gargallo-Castel and Galve-Górriz, 2012). Information and communication technology can promote the economic development of a nation (Wang et al., 2021; Huang et al., 2019; Keller and Heiko, 2014; Yu, Lin, and Liao, 2017; Torkayesh and Torkayesh, 2021). Also information and communication technology affects organization productivity (Garicano, 2010). Information technologies significantly affect the communication within an organization, and communication plays a significant role in all organizations. Information technologies are a key tool in the process of knowledge management (Mitić et al., 2017). White, Vanc, and Stafford (2010) investigated how employees in large companies observe communication. For employees at all levels direct interaction is the best accepted, but employees believe that communication by e-mail is an efficient way of sharing information. Information and communication technology can optimize production process and enable capital to replacing labor (Acemoglu and Restrepo, 2020; Autor et al., 2003). Vision is an organizational aim that guides strategy, policies, and tasks; it is also a key source of cultural formation and sustainable management. Vision plays a crucial role in an enterprise's development, acting as a bright light directing the business towards its mission (Liao and Huang, 2016). Jagersma (2003) found that vision and strategy are

correlated and that a clarified vision helps foster business strategy. Thus, the extent to which organizational members support and understand the vision is a key factor affecting performance (Balduck et al., 2010; James and Lahti 2011). The adoption of information and communication technologies (ICTs) in organizations promises to better connect managers with people, increase public participation in decision making, improve the efficiency of service delivery, decrease uncertainty, and improve information dissemination (Welch and Feeney, 2014). As described above, ICT can help create a clear vision for new products by improving knowledge sharing, speeding up the flow of information and communication, reducing uncertainty, and improving information dissemination. Based on the discussion above, this study offers the following hypothesis.

Hypothesis 5 Information and communication technology affects new product vision.

4. RESEARCH METHODOLOGY

The main method in examining the hypotheses in the present study is the structural equation modeling method. SEM can provide a more quantitative and conceptually appropriate or satisfying understanding of the relationships among key variables (Pollman, 2014; Yang et al., 2018; Hair et al., 2014). SEM development differs from other modeling approaches in that it tests both the direct and indirect effects on a presumed causal relationship (Fan et al., 2016). The advantage of SEM is the ability to incorporate unobserved latent factors whose implied values can be estimated from multiple observed indicators. Since these indicators are assumed to be caused by the latent factor or factors (Taucher and Oschlies, 2011; Chin, Marcolin, & Newsted, 2003).

4.1 Data Collection and Statistical population

Data gathering methods are divided into two categories: A) Library methods, B) Field methods. The statistical population of this study include managers of companies active in Automobile industry in Iran.

4.2 Sampling method and Sample-size

In this study, simple random sampling method was used which was carried out from among managers. Sample size was calculated to be 203 managers of companies active in Automobile industry in Iran.

4.3. Measures and Instrument development

Information and communication technology was the independent variable. In this study, Alam Beighi et al. (2009) questionnaire was used to measure the ICT. It measures six aspects included personal factors, attitude factors, training factors, economic factors, environmental factors and human and managerial factors. Organizational learning capability was the Mediator. In this study. Chiva et al. (2007) questionnaire was used to measure the OLC. It measures five aspects included experimentation, risk-taking, interaction with external environment, dialogue and participative decision making. In this study, the new product competitive advantage and new product vision were dependent variables. New product competitive advantage was measured by following the research of Singh and Sang (2007) with seven indicators and new product vision was measured by following Tsarola's (2007) research with three indicators.

Based on prior literature, the present research utilizes a 5-point Likert-type rating scale, containing both the extreme points as 1 = 'strongly disagree' and 5 = 'strongly agree' to accumulate responses for the multi-item constructs. All these studied measures have been adapted from prior researches which establish their validity, however, to check their validity in context to this study a series of tests relating to construct validity and reliability have been performed.

5. EMPIRICAL ANALYSIS AND RESULTS

Partial Least Square–Structural Equation Modeling (PLS-SEM) is a non-parametric approach that makes no distributional assumptions and can evaluate small sample sizes (Hamdollah and Baghaei, 2016). It is a research instrument utilized to quantify dynamic cause-effect relationship models with latent variables in various disciplines (Cepeda-Carrion et al., 2019). Hair et al. (2014) claimed that PLS-SEM's methodological toolbox could accommodate more complex model structures and handle data inadequacies such as heterogeneity. This emerging statistical approach

could substantially provide higher statistical power, making it a better alternative to covariance-based structural equation modeling, as supported by Leguina (2015). PLS-SEM has now become a popular statistical technique (Kumar and Purani, 2018). The analysis of this approach can be aided by Smart PLS, a robust software application with an accessible graphical user interface (Sarstedt and Cheah, 2019). An SEM model combines the attributes of two sub-models: a measurement model that reflects the multivariate relationship between latent variables and the measured variables and a structural model that reflects relationships among the latent variables. The measurement model and the structural model together show the overall model of the research (Zhang et al., 2022). An SEM model can first aggregate the observed variables into several common factors through confirmatory factor analysis, and then analyze the direct and indirect relationships between variables through path analysis (Ignacio et al., 2019).

5.1 Measurement model fit, Reliability, Validity and descriptive statistics

The measurement model defines how latent variables are measured through observed variables (Kang and Ahn, 2021; Abuzaid, Moeilak, and Alzaatreh, 2022). Each construct contains a set of indicators (Lin et al., 2005). To evaluate the measurement model, three cases of index reliability, convergent validity and divergent validity are used. The reliability of the index is measured by three criteria: 1- Cronbach's alpha (Cronbach, 1951; Cronbach and Shavelson, 2004), 2- Composite reliability (CR) (Bagozzi & Yi, 1988; Cho, 2016), 3- Factor loadings coefficients. At first, the factor loading coefficient of each criterion must be checked and if this coefficient is less than 0.4, the criteria must be deleted. The factor loading coefficients of X15=0.382, NPV3=0.260, NPV2=0.165, CA6=0.382, and OLC11=0.084 are less than 0.4 so they must be deleted. Figure 2 shows the coefficients of factor loadings after removing the indices with a factor loading less than 0.4.

Reliability indicates the internal consistency of the items and evaluates the extent to which these items are free from random error (Rahman, 2022; Kuei and Madu, 2001). According to Hair, Black, Babin, and Anderson (2010); Al-Refaie (2011); Kim et al. (2020); Basak et al. (2021) and Al-Refaie et al. (2011), the composite reliability and Cronbach's α values ideally reflect the internal consistency of the unique and distinct items assigned under each construct. After the analysis, as shown in Table 1, the calculated composite reliability and Cronbach's α values were found to be above

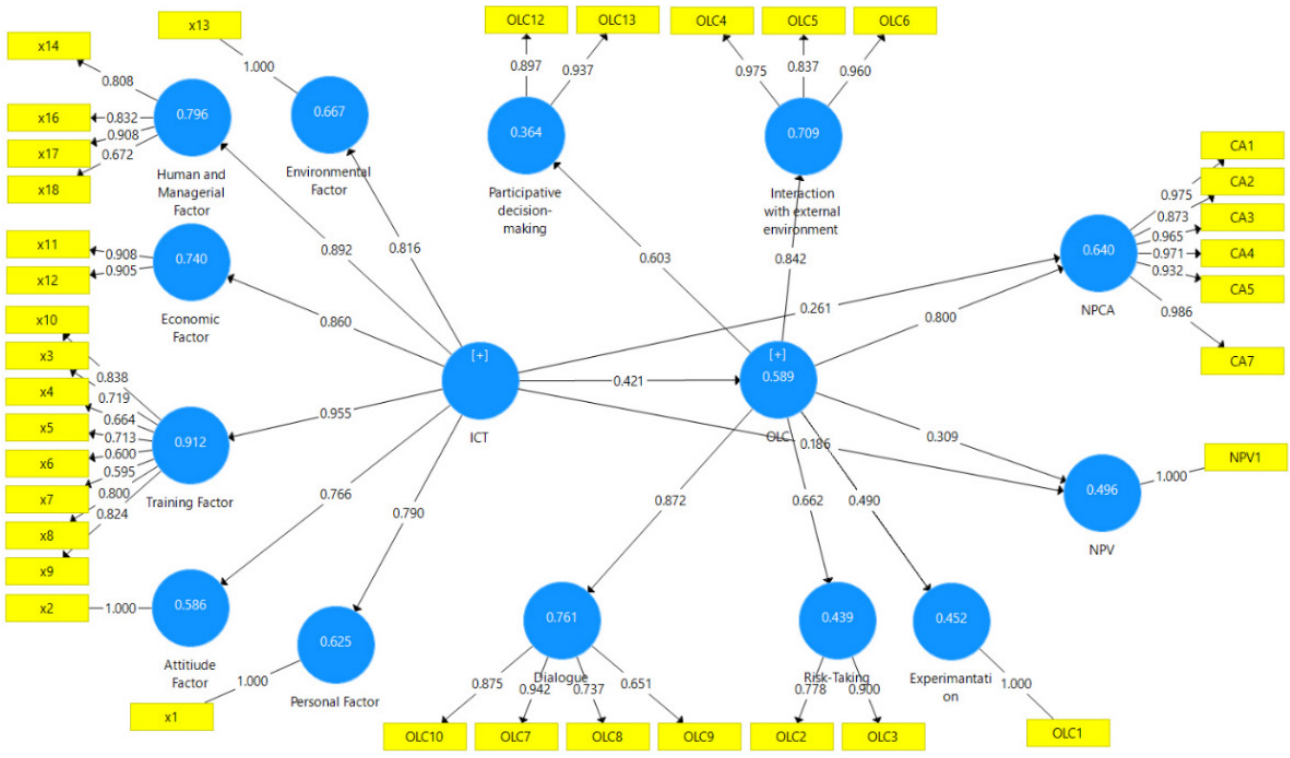

Figure 2 Standard factor loading coefficient (Path coefficient).

the recommended value of 0.7 and thereby, confirms the higher reliability of the items studied under each construct (Cronbach and Shavelson, 2004). Similar test has also been conducted by Lu and Ramamurthy (2011) to examine the reliability of their studied variables. The instrument's validity is determined by how well it measures the construct it was designed to test for (Field, 2009). For construct validity test, two separate tests such as the convergent and discriminant validity of items have been conducted.

1. Test for convergent validity: Following Hair et al. (2010) and Kim et al. (2020), the estimated average variance extracted (AVE) values for each latent construct greater than the standard value of 0.5 confirms the convergent validity of the items. The AVE denotes the mean amount of variation explained by a construct in its criterion variables compared to the total variance of its criterions (Henseler et al., 2014). A test of significance, that is a t-test has also been conducted to determine the t-statistics values which are found to be significant (since, all $p < .05$) for all the factor loadings and thereby, establish the convergent validity criterion. Similar test has

Table 1 Cronbach's α, CR, AVE and Descriptive Statistics for latent constructs.

Latent constructs	Cronbach's α	CR	AVE	Mean	SD	S.E. mean
Experimentation	1.000	1.000	1.000	4.6495	.47961	.04870
Risk-Taking	0.759	0.828	0.707	4.5155	.45331	.04603
Interaction with External Environment	0.916	0.947	0.857	4.1478	.64365	.06535
Dialogue	0.817	0.881	0.655	4.1005	.47001	.04772
Participative decision-making	0.814	0.914	0.841	4.1718	.66686	.06771
Personal Factor	1.000	1.000	1.000	3.0722	1.13878	.11563
Attitude Factor	1.000	1.000	1.000	3.7938	1.07953	.10961
Training Factor	0.868	0.884	0.525	3.3879	.73098	.07422
Economic Factor	0.783	0.902	0.822	3.0515	1.03954	.10555
Environmental Factor	1.000	1.000	1.000	3.3196	1.02618	.10419
Human and Managerial Factor	0.822	0.883	0.656	3.3938	1.27654	.12961
NPCA	0.979	0.983	0.905	3.8823	.88759	.06690
NPV	1.000	1.000	1.000	3.9811	.31212	.02353
ICT	0.938	0.9389	0.720	3.3365	.86555	.08788
OLC	0.791	0.8428	0.5172	4.3170	.29751	.03021

Table 2 Discriminant validity (Fornell-Larker Criterion).

	A-F	D	Ec-F	En-F	E	H&M-F	I	NPCA	NPV	P-D	P-F	R	T-F
A-F	1.000												
D	0.049	0.809											
Ec-F	0.552	0.074	0.907										
En-F	0.615	0.058	0.595	1.000									
E	0.101	0.045	0.068	0.87	1.000								
H&M-F	0.634	0.080	0.741	0741	0.048	0.810							
I	0.004	0.772	0.132	0171	0.108	0.094	0.926						
NPCA	0.018	0.584	0.013	0.081	0.423	0.098	0.511	0.951					
NPV	0.050	0144	0.016	0.104	0.057	0.039	0.039	0.645	1.000				
P-D	0.014	0.394	0.069	0.035	0.365	0.086	0.210	0.780	0.682	0.917			
P-F	0.555	0.016	0.695	0.631	0.068	0.667	0.085	0.029	0.008	0.090	1.000		
R	0.089	0.305	0.061	0.040	0.720	0.107	0.408	0.638	0.308	0.434	0.007	0.841	
T-F	0.725	0.035	0.784	0.735	0.082	0.760	0.080	0.001	0.002	0.006	0.712	0.016	0.725

Fornell-Larker Criterion is estimated for first-order latent constructs.
E = Experimentation; R = Risk-Taking; I = Interaction with External Environment; D = Dialogue; P-D= Participative decision-making; P-F = Personal Factor; A-F = Attitude Factor; T-F = Training Factor; Ec-F = Economic Factor; En-F = Environmental Factor; H&M-F = Human and Managerial Factor.

also been conducted by Bi et al. (2013) and Tamilmani et al. (2020).

2. Test for discriminant validity: Following Fornell and Larcker (1981), discriminant validity is estimated when the distinctive and unique values of the individual measures converge at their specific accurate scores. The AVE values represent the discriminant validity of the constructs and according to Gefen, Straub, and Boudreau (2000) and Henseler et al. (2015), the square root of the AVE for each construct should be greater than the inter-construct correlation. Table 2 ascertains that all the studied constructs satisfy the discriminant validity criterion. Similar test has also been conducted by Panda and Rath (2016) to examine the discriminant validity of constructs.

5.2 Structural model fit

After confirming the optimal fit of the validity and reliability of the measurement sections, it is time to examine the structural part of the model. In this section, the most common criterion for measuring the link between constructs in the model (structural part) is the significant t-value (T-Statistics) (Mai et al., 2021). If the t-value exceeds 1.96, it indicates the significant link between the constructs. The second criterion for measuring the structural model fit is R^2. Following Khunsoonthornkit and Panjakajornsak (2018) and Wang et al. (2022), R^2 is a criterion used to connect the measurement part and the structural part of model and shows the effect that an exogenous variable has on an endogenous variable. 0.19, 0.33 and 0.67 are introduced as the values for weak, medium and strong values of R^2. The third criterion is Q^2. This criterion determines the predictive power of the model and if it is equal to or greater than 0.15, it indicates the appropriate predictive power of the independent variable. Table 3 ascertains that the structural model fit is at the appropriate level.

5.3 Overall model fit

To evaluate the overall model fit, the GOF criterion is used. Goodness-of-fit measures how well the researcher's model reproduces the actual phenomenon presented in the data (Kang and Ahn, 2021). Wetzels et al. (2009) have introduced three values of 0.01, 0.25 and 0.36 as weak, medium and strong values for GOF[1]. Similar test has also been conducted by Kim et al. (2005); Schermelleh-Engel et al. (2003); Spitale et al. (2009) and Zhang et al. (2022) to examine the GOF criterion. A value of 0.65 for GOF indicates a very strong overall fit of the research model.

[1] Goodness of Fit

Table 3 R^2 and Q^2 coefficients and T-Statistics to measure the structural model fit.

latent constructs	R^2	Q^2	T-Statistics
Experimentation	0.452	0.222	
Risk-Taking	0.439	0.283	
Interaction with External Environment	0.709	0.616	
Dialogue	0.761	0.50	
Participative decision-making	0.364	0.188	
Personal Factor	0.625	0.619	
Attitude Factor	0.586	0.566	
Training Factor	0.912	0.453	
Economic Factor	0.740	0.598	
Environmental Factor	0.667	0.644	
Human and Managerial Factor	0.796	0.430	
NPCA	0.640	0.465	
NPV	0.496	0.308	
ICT	-	-	
OLC	0.589	0.415	
ICT --> OLC			3.028
OLC --> NPCA			13.320
OLC --> NPV			3.087
ICT --> NPCA			3.110
ICT --> NPV			2.010

R^2 and Q^2 coefficients are not calculated for the independent variables.

Table 4. Hypothesis testing results

Hypotheses	Path coefficient	T-value	P-value	Test results
Information and communication technology affects organizational learning capability	0.421	3.028	0.000*	Supported
Organizational learning capability affects new product competitive advantage	0.800	13.320	0.000*	Supported
Organizational learning capability affects new product vision	0.309	3.087	0.000*	Supported
Information and communication technology affects new product competitive advantage	0.261	3.110	0.000*	Supported
Information and communication technology affects new product vision	0.186	2.010	0.000*	Supported

*$p < 0.05$.

5.4 Hypothesis testing results

The current study has used the SEM approach to test the formulated hypotheses (Chin et al., 2003; Hair et al., 2014; Henseler et al., 2015), where the results are derived on the basis of the path coefficients (Kim et al., 2020). A significance level of 0.05 is adopted to test all hypotheses. Similar significance level has also been considered by Al-Refaie (2015), Eriksson (2017) and Guzman (2022) to test their studied hypotheses. The present research has both direct and indirect effects similar to Foerstl et al. (2016) research.

T-value for ICT to OLC is 3.028 which is higher than the critical t-value of 1.96. this means that in confidence limit of 95%, there is a significant impact of information and communication technology on organizational learning capacity. Furthermore, the standard factor loading coefficient shows the changes in organizational learning capacity due to changes in information and communication technology and is equal to 0.421 as can be seen in figure 3. This means that 42.1% of changes in organizational learning capacity is due to changes in information and communication technology. There is a similar analysis and interpretation for other hypotheses, which is presented in the conclusion section.

6. DISCUSSION

At information and communication age, phenomenal development of communication and information technology changes the world (Nazemi et al., 2005; Shahzad et al., 2020; Niu, Wang, and Zhang, 2021; Zhang, van Donk, and Jayaram, 2020). This technology by enhancing the information exchange process and cost reduction has been presented as inducement for increasing productivity and efficiency, competition and growth in every human activity (Hafkin and Tagart, 2004; Tong, Yang, and Teo, 2013; Arvanitis and Loukis, 2009). The exploration on how to manage organizational resources and capabilities to sustain competitive advantages remains the intriguing unit of research of strategic management science (Čirjevskis., 2016). It is especially through for information and communication technologies Industry where technologies developing with astonishing speed and where the life cycles of cutting-edge products are becoming shorter and shorter, and brand-new products of firms are routinely being imitated by others (Yun et al. 2016). Therefore, the rapidly changing economic landscape, coupled with transformational advances in information and communication technologies, presents many challenges to managers of large and small enterprises alike (Amit and Zott 2016). So ICT is significant as comprehensive phenomenon in personal application to political and economic activities because it is multifunctional and flexible instrument that supplies proper solution in personal and local applications to satisfy various needs (Castelz, 2001). Granroos (2000) indicates that ICT can cause organizational interaction promotion, cost reduction of management and social interaction promotion of an organization so pay attention to ICT and evaluate its level is fundamental and very important. Knowledge changes makes new imbalance. Knowledge flow changes organizations so organizations must change continuously. But do organizations know suitable resources for maximizing the innovation? Researchers pay attention to factors which develop organizational innovation and introduce organizational learning as core instrument for making innovation, economic growth, organization survivability and also factor for employees' productivity and organizational performance improvement (Arango et al., 2007;

Cegarra-Navarro et al., 2020). In past, fundamental building of organizations was workforce and capital but nowadays organizations which learn and be innovative and service-oriented are successful. Relatively, resources for controlling an organization was outside but in present new resources which are intangible are inside. Intangible resources create knowledge and organizational learning is basic method for knowledge creation. Organizational learning is not sufficient lonely because its ultimate goal is performance improvement and competitive advantage obtainability, retain ability and improvement. Saban introduce organizational learning as important and critical component for innovation that has been developed through new product. He supposed that before on organization can improve innovation behavior, management must analyze common learning in organization (Petrra et al., 2002). In fact, organization learning is important strategy for creating competitive advantage in organizations because competent employees are valuable resources for organizations (Saru, 2007). Also, organizational learning can help organizations achieve their performance goals and vision (Goh, 2003).

7. CONCLUSION

Information and communication technology (ICT) actively promotes development of emerging industries in the global market and has an influence in the process of an economy's structural change, since it catalyzes the creation of some new markets and disappearance of others (Li, Lee, and Kong, 2019). Typically, the financial technology industry, the convergence of traditional financial industry and ICT, has become a hot topic in the world economy and attracted increasingly huge investment. Firm-level investment in ICT increased the performance and value of the firms (Chadee and Pang, 2008, Kudyba and Diwan, 2002), and ICT firms had higher profit ratios and lower cost ratios than non-ICT firms (Santhanam and Hartono, 2003). The ICT-enabled financial services include P2P, online banking, e-wallets. That is to say, ICT has penetrated the traditional financial market through innovative technological activities, transforming and upgrading the traditional financial industry to a more internet- and technology-based structure. The ICT industry is an enabler and a driver of economic development and growth, it is imperative to gain knowledge on the functioning of ICT in other industries at different levels (Li, Lee, and Kong, 2019). Organizational learning capability is considered as factors and managerial and organizational characteristics which facilitate organizational learning process and permit it to learn. Also ICT affects on OLC and has significant role in identifying the level of OLC. The results showed that the path significance coefficient for ICT to OLC is 3.028 which is higher than the critical value of 1.96 which shows a significant path and effect of ICT on OLC. Furthermore, the standard factor loading coefficient shows the changes in OLC due to changes in ICT and is equal to 0.421. This means that 42.1% of changes in OLC is due to changes ICT or in other words, ICT determines 42.1% of changes in OLC. The path significance coefficient and the standard factor loading coefficient, respectively, for the impact of ICT on NPV are 2.010 and 0.186, ICT on NPCA are 3.110 and 0.261, OLC on NPV are 3.087 and 0.309, OLC on NPCA are 13.320 and 0.800. All coefficients presented confirm all hypotheses. Finally, it can be stated that information and communication technology, in addition to having a significant effect on organizational learning capability, can directly and indirectly affect the competitive advantage of the new product and the new product vision and play a significant role in determining the level of each these variables.

REFERENCES

Abell, M. (2006). Individualizing learning using intelligent technology and universally designed curriculum. Journal of Technology, Learning, and Assessment, 5(3), 5–10.

Abuzaid, H., Moeilak, L. A., and Alzaatreh, A. (2022). Customers' perception of residential photovoltaic solar projects in the UAE: A structural equation modeling approach. Energy Strategy Reviews, 39, 1–14.

Acemoglu, D., and Restrepo, P. (2018). The race between man and machine: Implications of technology for growth, factor shares, and employment[J]. The American Economic Review, 108(6), 1488–1542.

Ahmad, S., and Wan Afthanorhan, W. M. A. B. (2014). The importance-performance matrix analysis in partial least square structural equation modeling (PLS-SEM). International Journal of Mathematical Research, 3 (1), 1–14.

Akshay, M., Dhirubhai, A. (2005). ICT and Rural Societies: Opportunities for Growth.

The International Information & Library Review. 37, 345–351.

Alam Beigi, A., Malek Ahmadi, E., Moghimi, M. (2009). Analyzing the effects of components of ICT on organizational entrepreneurship development in Iran's agricultural development organization. Journal of Economic and Agricultural development, 2 (40), 103–113.

Albertini, E. (2019). The contribution of management control systems to environmental capabilities. Journal of Business Ethics, 159(4), 1163–1180.

Alexandru, A. (2006). ICT and Its Impact upon the Globalization and Accessibility of the Education in the Health Domain. The Information Society. 22, 279–290.

Allan, H. K., Yuen, N. L., Wong, K. C. (2009). ICT implementation and school leadership: Case studies of ICT integration in teaching and learning. Journal of Educational Administration. 41 (2), 158–170.

Al-Refaie, A. (2011). A structural model to investigate factors affect patient satisfaction and revisit intention in Jordanian hospitals. International Journal of Artificial Life Research, 2(4), 43–56.

Al-Refaie, A., Ghnaimat, O., and Ko, J-H. (2011). The effects of quality management practices on customer satisfaction and innovation: A perspective from Jordan. International Journal of Productivity and Quality Management, 8(4), 398–415.

Al-Refaie, A. (2015). Effects of human resource management on hotel performance using structural equation modeling. Computers in Human Behavior, 43, 293–303.

Alt, E., Díez-de-Castro, E. P., and Lloréns-Montes, F. J. (2015). Linking employee stakeholders to environmental performance: The role of proactive environmental strategies and shared vision. Journal of Business Ethics, 128(1), 167–181. https://doi.org/10.1007/s10551-014-2095-x.

Ambrosini, V., & Bowman, C. (2009). What are dynamic capabilities and are they a useful construct in strategic management? International Journal of Management Review, 11(1), 29–49.

Amit, R., & Zott, C. (2016). Business model design: a dynamic capability perspective. the oxford handbook of dynamic capabilities. doi:10.1093/oxfordhb/9780199678914.013.2.

Amuna, Y. M. A., Al Shobaki, M. J., and Abu Naser, S. S. (2017). Strategic Environmental Scanning: An Approach for Crises Management. International Journal of Information Technology and Electrical Engineering ITEE, 6, 28–34.

An, J., Kim, K., Noh, H., and Lee, S. (2016). Identifying converging technologies in ICT industry: analysis of patents published by incumbents and entrants. Journal of Korean Institute of Industrial Engineers, 42(3), 209–221.

Aragón-Correa, J. A., Martín-Tapia, I., and Hurtado-Torres, N. E. (2013). Proactive environmental strategies and employee inclusion: The positive effects of information sharing and promoting collaboration and the influence of uncertainty. Organization & Environment, 26(2), 139–161.https://doi.org/10.1177/1086026613489034.

Arvanitis, S., and Loukis, E. N. (2009). Information and communication technologies, human capital, workplace organization and labour productivity: A comparative study based on firm-level data for Greece and Switzerland. Information Economics and Policy, 21(1), 43 61. doi:10.1016/j.infoecopol.2008.09

Ashton, H., Thorn, D. (2007). The Role of Information and Communications Technology in Retrieving Local Community. Oxford Brundtland commission. 35, 15–141.

Asikainen, AL., and Mangiarotti, G. (2017). Open innovation and growth in IT sector. Service Business,11(2), 45–68.

Autor, D. H., Levy, F., and Murnane, R. J. (2003). The skill content of recent technological change: An empirical exploration[J]. Quarterly Journal of Economics, 118(4), 1279–1333.

Ayisi Nyarko, D., and Kozári, J. (2021). Information and communication technologies (ICTs) usage among agricultural extension officers and its impact on extension delivery in Ghana. Journal of the Saudi Society of Agricultural Sciences, 20(3), 164–172. doi:10.1016/j.jssas.2021.01.002

Babuji, H. and Crossan, M. (2004). From questions to answers: reviewing organizational learning research. Management Learning. 35 (4), 397–417.

Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. Journal of the Academy of Marketing Science, 16(1), 74–94. https://doi.org/10.1007/BF02723327.

Balduck, A-L., Rossem, A. V., & Buelens, M. (2010). Identifying Competencies of Volunteer Board Members of Community Sports Clubs. Nonprofit and Voluntary Sector Quarterly, 39(2), 213–235

Barnett, W., and McKendrick, D. (2004). Why are some organizations more competitive than others? Evidence from a changing global market. Administrative Science Quarterly, 49, 535–571.

Barney, J. (2001). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. Journal of Management, 27(6), 643–650

Barney, J.B. (1991). Firm resources and sustained competitive advantage. Journal of Management, 17 (1), 99–120.

Barney, J.B. and Clark, D.N. (2007). Resource-Based Theory: Creating and Sustaining Competitive Advantage. Oxford University Press, Oxford, UK.

Barua, A., Konana, P., Whinston, A. B., and Fang, Y. (2004). An empirical investigation of net-enabled business value. MIS Quarterly, 28(4), 585–620.

Basak, D., Bose, A., Roy, S., Chowdhury, I. R., and Sarkar, B. C. (2021). Understanding sustainable homestay tourism as a driving factor of tourist's satisfaction through structural equation modelling: A case of Darjeeling Himalayan region, India, Current Research in Environmental Sustainability 3, 1–13.

Bharadwaj, A. S. (2000). A resource-based perspective on information technology capability and firm performance: An empirical investigation. MIS Quarterly, 24(1), 169–196.

Birchall, D. V., Giambona, G. (2010). The impact of ICT on the work patterns of managers and their organizations. EuroMed Journal of Business. 3 (3), 244–262.

Brown, T., Mccormac, Z. (2009). An Analysis of the Research & Impact of ICT in Education in Developing Country Contexts. Journal of Education for International Development. 4 (2), 14–23.

Brush, T, Glazewski, K. D., Hew, K. F. (2008). Development of an instrument to measure preservice teachers' technology skills, technology beliefs, and technology barriers. Computers in the Schools, 25(1–2), 112–25.

Cao, G., Duan, Y., and Cadden, T. (2019). The link between information processing capability and competitive advantage mediated through decision-making effectiveness. International Journal of Information Management, 44, 121–131.

Cao, G., Duan, Y., Edwards, J. S., and Dwivedi, Y. K. (2021). Understanding managers' attitudes and behavioral intentions towards using artificial intelligence for organizational decision-making. Technovation, 106, 102312.

Cao, D., Wang, Y., Berkeley, N., and Tjahjono, B. (2021). Configurational conditions and Sustained Competitive Advantage: A fsQCA approach. Long Range Planning, 1–14. https://doi.org/10.1016/j.lrp.2021.102131

Cegarra-Navarro, J.-G., Wensley, A. K. P., Martínez-Martínez, A., and García-Pérez, A. (2020). Linking organisational commitment with continuous learning through peripheral vision and procedural memory. European Management Journal, 38(6), 874–883. doi:10.1016/j.emj.2020.05.003

Cepeda-Carrion, G., Cegarra-Navarro, J.G., and Cillo, V. (2019). Tips to use partial least squares structural equation modelling (PLS-SEM) in knowledge management. Journal of Knowledge Management, 23 (1), 67–89. https://doi.org/10.1108/JKM-05-2018-0322.

Chadee, D. and Kumar, R. (2001). Sustaining the International Competitive Advantage of Asian Firms: A Conceptual Framework and Research Propositions. Asia Pacific Journal of Management, 18, 461–480.

Chadee, D.D., Pang, B. (2008). Technology strategy and performance: a study of information technology service providers from selected Asian countries. Service Business, 2, 109–126.

Chadwick, C., Super, J.F., and Kwon, K. (2015). Resource orchestration in practice: CEO emphasis on SHRM, commitment-based HR systems, and firm performance. Strategic Management Journal, 36 (3), 360–376.

Chai, C. S., Koh, J. H. L., Tsai, C. C. (2010). Facilitating preservice teachers' development of technological, pedagogical, and content knowledge (TPACK). Journal of Educational Technology and Society, 13(4), 63–73.

Chatterjee, S., Rana, N. P., Tamilmani, K., Sharma, A. (2021). The effect of AI-based CRM on organization performance and competitive advantage: An empirical analysis in the B2B context. Industrial Marketing Management, 97, 205–219.

Chen, D. Q., Preston, D. S., and Swink, M. (2015). How the use of big data analytics affects value creation in supply Chain management? Journal of Management Information Systems, 32(4), 4–39.

Chin, W. W., Marcolin, B. L., and Newsted, P. R. (2003). A partial least squares latent variable modeling approach for measuring

interaction effects: Results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study. Information Systems Research, 14(2), 189–217. https://doi.org/10.1287/isre.14.2.189.16018.

Chiva, R., Alegre, J. and Lapiedra, R. (2007). Measuring organizational learning Capability among the workforce. International Journal of Manpower. 28 (3/4), 224–242.

Čirjevskis, A. (2016). Designing dynamically "signature business model" that support durable competitive advantage. Journal of Open Innovation: Technology, Market, and Complexity, 2 (15), 1–21.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. Psychometrika, 16(3), 297–334. https://doi.org/10.1007/BF02310555

Cronbach, L. J., and Shavelson, R. J. (2004). My current thoughts on coefficient alpha and successor procedures. Educational and Psychological Measurement, 64(3), 391–418.

Colecchia, A., Schreyer, P. (2002). The Contribution of ICTs to Economic Growth in Nine OECD Countries. OECD Economic Studies. 34, 204–227.

Collins, C. J., and Clark, K. D. (2003). Strategic human resource practices, top management team social networks, and firm performance: The role of human resource practices in creating organizational competitive advantage. Academy of Management Journal, 46(6), 740–751. 1–15.

Davari, A., Reza Zade, A. (2014). Structural equation modeling with PLS. Tehran: Jahad Daneshgahi Organization.

Davenport, T. H., Harris, J. G., De Long, D. W., and Jacobson, A. L. (2001). Data to knowledge to results: Building an analytic capability. California Management Review, 43(2), 117–138.

Eriksson, P. E., Larsson, J., and Pesämaa, O. (2017). Managing complex projects in the infrastructure sector–A structural equation model for flexibility-focused project management, International Journal of Project Management, 35, 1512–1523.

Fernández-Mesa, A. and Alegre, J. (2015). Entrepreneurial orientation and export intensity: Examining the interplay of organizational learning and innovation. International Business Review, 24(1), 148–156. doi:10.1016/j.ibusrev.2014.07.004

Field, A. (2009). Discovering Statistics Using SPSS, third ed. SAGE Publications Ltd, New Delhi.

Foerstl, K., Franke, H., and Zimmermann, F. (2016). Mediation effects in the 'purchasing and supply management (PSM) practice–performance link': Findings from a meta-analytical structural equation model, Journal of Purchasing and Supply Management, 22 (4), 351–366.

Fornell, C., Larcker, D. (1981). Structural equation models with unobservable variables and measurement error: algebra and Statistics. J. Mark. Res. 18 (3), 382.

García-Morales, V. J., Jiménez-Barrionuevo, M. M., and Mihi-Ramírez, A. (2011). The influence of strategic dynamic capabilities on organizational outcomes through the organizational learning process. Industry and Innovation, 18(7), 685–708. https://doi.org/10.1080/13662716.2011.604473

Gargallo-Castel, A. F., and Galve-Górriz, C. (2012). A Firm-level investigation of the complementarity between information and communication technologies and organizational resources. Procedia-Social and Behavioral Sciences, 41, 51–58. doi: 10.1016/j.sbspro.2012.04.007

Garicano, L. (2010). Policemen, managers, lawyers: New results on complementarities between organization and information and communication technology. International Journal of Industrial Organization, 28(4), 355–358. doi:10.1016/j.ijindorg.2010.03.00

Gil-Saura, I., Berenguer-Contrı´, G., Ruiz-Molina, M-E. (2009). Information and Information and communication technology in retailing: A cross-industry comparison. Journal of Retailing and Consumer Services, 16, 232–238.

Gnambs, T. (2021). The development of gender differences in information and communication technology (ICT) literacy in middle adolescence. Computers in Human Behavior, 114, 106533. doi:10.1016/j.chb.2020.106533

Goh, S. C. (2003). Improving organizational learning capability: Lessons from two case studies. The Learning Organization. 10 (4/5), 216–227.

Gomes, G., and Wojahn, R. M. (2017). Organizational learning capability, innovation and performance: study in small and medium-sized enterprises (SMES). Revista de Administração, 52(2), 163–175.

Gómez-Fernández, N., and Mediavilla, M. (2021). Exploring the relationship between Information and Communication Technologies (ICT) and academic performance: A multilevel analysis for Spain. Socio-Economic

Planning Sciences, 77, 101009. doi:10.1016/j.seps.2021.101009

Gunasekaran, A., Subramanian, N., and Papadopoulos, T. (2017). Information technology for competitive advantage within logistics and supply chains: A review. Transportation Research Part E, 99, 14–33.

Guzman, J., Recoco, G. A., Pandi, A. W., Padrones, J. M., and Ignacio, J. J. (2022). Evaluating workplace safety in the oil and gas industry during the COVID-19 pandemic using occupational health and safety Vulnerability Measure and partial least square Structural Equation Modelling, Cleaner Engineering and Technology, 6, 1–12.

Guzman, J. H. E., et al. (2022). Information and Communication Technologies (ICT) in the processes of distribution and use of knowledge in Higher Education Institutions (HEIs), Procedia Computer Science, 198, 644–649.

Hair, J., Black, W. C., Babin, B. J., Anderson, R. E. (2010). Multivariate Data Analysis (Seventh).

Hair Jr, J. F., Jr, Sarstedt, M., Hopkins, L., and Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM). European Business Review, 26(2), 106–121. https://doi.org/10.1108/EBR-10-2013-0128

Hennessy, S., Ruthven, K., Brindley, S. (2005). Teachers perspective on integrate ICT into subject teaching: Commitment, constraints, caution and change. Curriculum studies, 37 (7), 155–192.

Henseler, J., Ringle, C. M., and Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. Journal of the Academy of Marketing Science, 43(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8.

Huang, F., Teo, T., Sanchez-Prieto, J. C., García-Penalvo, F. J., and Olmos-Migueĺanez, S. (2019). Cultural values and technology adoption: a model comparison with university teachers from China and Spain, Computers & Education, 133, 69–81.

Hyun, L. D., Hong, G. Y., and Lee, S-G. (2019). The relationship among competitive advantage, catchup, and linkage effects: a comparative study on ICT industry between South Korea and India. Service Business, 13, 603–624.

Ignacio, J. J., Malenab, R. A., Pausta, C. M., Beltran, A., Belo, L., Tanhueco, R. M., Promentilla, M. A., and Orbecido, A. (2019). A perception study of an integrated water system project in a water scarce community in the Philippines. Water, 11 (8), 1–23. https://doi.org/10.3390/w11081593.

Jagersma, P. K. (2003), Innovate or die., The Journal of Business Strategy. 24 (1), 25–28.

James, K., and Lahti, K. (2011). Organizational Vision and System Influences on Employee Inspiration and Organizational Performance. Creativity and Innovation Management,20 (2), 108–120.

Jerez-Gomez, P. Céspedes-Lorente, C., and Valle-Cabrera, R. (2005). Organizational learning capability: a proposal of measurement. Journal of Business Research, 58 (6), 715–725.

Jiménez-Jiménez, D. and Sanz-Valle, R. (2011) . Innovation, Organizational Learning, and Performance. Journal of Business Research, 64 (4), 408–417.

Johnson, M. P. (2017). Knowledge acquisition and development in sustainability-oriented small and medium-sized enterprises: Exploring the practices, capabilities and cooperation. Journal of cleaner production, 142, 3769–3781.

Journeault, M. (2016). The influence of the eco-control package on environmental and economic performance: A natural resource-based approach. Journal of Management Accounting Research, 28(2), 149–178

Kahupi, I., Hull, C. L., Okorie, O., and Millette, S. (2021). Building competitive advantage with sustainable products e A case study perspective of stakeholders. Journal of Cleaner Production ,289, 1–11. 125699

Kalmuk, G. and Acar, A. Z. (2015). The Mediating Role of Organizational Learning Capability on the Relationship Between Innovation and Firm's Performance: A Conceptual Framework. Procedia–Social and Behavioral Sciences, 210, 164–169. doi:10.1016/j.sbspro.2015.11.355

Kang, H. and Ahn, J-W. (2021). Model Setting and Interpretation of Results in Research Using Structural Equation Modeling: A Checklist with Guiding Questions for Reporting. Asian Nursing Research 15 (3), 157–162.

Keller, J. and Gracht, H. A. V. D. (2014). The influence of information and communication technology (ICT) on future foresight processes—results from a Delphi survey, Technological Forecasting and Social Change, 85, 81–92.

Ketprapakorn, N. and Kantabutra, S. 2019. Culture Development for Sustainable SMEs:

Toward a Behavioral Theory. Sustainability, 11 (9), 1–15.

Khunsoonthornkit, A and Panjakajornsak, V. (2018). Structural equation model to assess the impact of learning organization and commitment on the performance of research organizations. Kasetsart Journal of Social Sciences, 39 (3), 457–462.

Kim, W., Kim, N., Lyons, J. B., Nam, C. S. (2020). Factors affecting trust in high-vulnerability human-robot interaction contexts: A structural equation modelling approach. Applied Ergonomics, 85, 1–12. https://doi.org/10.1016/j.apergo.2020.103056

Kiron, D., Prentice, P. K., and Ferguson, R. B. (2012). Innovating with analytics. MIT Sloan Management Review, 54(1), 47–52.

Kiron, D., and Shockley, R. (2011). Creating business value analytics. MIT Sloan Management Review, 53(1), 57–63.

Knudsen, E. S., Lien, L.B., Timmermans, B., Belik, I., and Pandey, S. (2021). Stability in turbulent times? The effect of digitalization on the sustainability of competitive advantage. Journal of Business Research, 128, 360–369.

Kudyba, S, Diwan, R. (2002). Research report: increasing returns to information technology. Information Systems Research, 13(1), 104–111.

Kuei, C., Madu, C. N. (2001). Identifying critical success factors for supply chain quality management. Asia Pacific Management Review, 6 (4), 409–423.

Kumar, D. S., and Purani, K. (2018). Model specification issues in PLS-SEM: illustrating linear and non-linear models in hospitality services context. Journal of Hospitality and Tourism Technology, 9 (3), 338–353. https://doi.org/10.1108/JHTT-09-2017-0105.

Lazzarini, S. G. (2015). Strategizing by the government: Can industrial policy create firm level competitive advantage? Strategic Management Journal, 36(1), 97–112.

Lee, C.-C., Lin, S.-P., Yang, S.-L., Tsou, M.-Y., and Chang, K.-Y. (2013). Evaluating the influence of perceived organizational learning capability on user acceptance of information technology among operating room nurse staff. Acta Anaesthesiologica Taiwanica, 51(1), 22–27.

Leiblein, M., Chen, J., and Posen, H. (2017). Resource allocation in strategic factor markets: A realistic real options approach to generating competitive advantage. Journal of Management, 43, 2588–2608

Liao, K.-H., and Huang, I.-S. (2016). Impact of Vision, Strategy, and Human Resource on Nonprofit Organization Service Performance. Procedia–Social and Behavioral Sciences, 224, 20–27. doi:10.1016/j.sbspro.2016.05.395

Liao, S.-H., Kuo, F.-I., Ding, L.-W. (2017). Assessing the influence of supply chain collaboration value innovation, supply chain capability and competitive advantage in Taiwan's networking communication industry. International Journal of Production Economics, 191, 143–153. doi: 10.1016/j. ijpe.2017.06.001.

Lin, C., Chow, W. S., Madu, C. N., Kuei, C-H., and Yu, P. P. (2005). A structural equation model of supply chain quality management and organizational performance, International Journal of Production Economics, 96, 355–365.

Lim, J.-H., Stratopoulos, T. C., and Wirjanto, T. S. (2012). Role of IT executives in the firm's ability to achieve competitive advantage through IT capability. International Journal of Accounting Information Systems, 13(1), 21–40.

López-Gamero, M. D., Pertusa-Ortega, E. M., Molina-Azorín, J. F., Tarí-Guilló, J. J., and Pereira-Moliner, J. (2016). Organizational antecedents and competitive consequences of environmental proactivity in the hotel industry. Journal of Sustainable Tourism, 24(7), 949–970.

Mai, R., Niemand, T., and Kraus, s. (2021). A tailored-fit model evaluation strategy for better decisions about structural equation models. Technological Forecasting & Social Change, 173, 1–17, https://doi.org/10.1016/j.techfore.2021.121142

Mao, H., Liu, S., Zhang, J. and Deng, Z. (2016). Information Technology Resource, Knowledge Management Capability, and Competitive Advantage: The Moderating Role of Resource Commitment. International Journal of Information Management, 36, 1062–1074.

Ministry. J, and Pitner, T. (2014). Academic-industrial cooperation in ICT in a transition economy: two cases from the Czech Republic. Information Technology for Development, 21(3), 480–491.

Miotto, G., Del-Castillo-Feito, C., and Blanco-González, A. (2020). Reputation and legitimacy: Key factors for Higher Education Institutions' sustained competitive advantage. Journal of Business Research, 112, 342–353.

Mirghani, M., Arthur M., Mohamed, M. (2010). The role of information and communication technology (ICT) in mobilization of sustainable development knowledge: a quantitative evaluation. Journal of Knowledge Management, 14 (5), 744–758.

Mithas, S., and Rust, R. T. (2016). How Information Technology Strategy and Investments Influence Firm Performance: Conjecture and Empirical Evidence. MIS Quarterly, 40, 223–245.

Mithas, S., Tafti, A., Bardhan, I., and Mein Goh, J. (2012). Information technology and firm profitability: Mechanisms and empirical evidence. MIS Quarterly, 36(1), 205–224.

Mitić, S., Nikolić, M., Jankov, J., Vukonjanski, J., and Terek, E. (2017). The impact of information technologies on communication satisfaction and organizational learning in companies in Serbia. Computers in Human Behavior, 76, 87–101. doi:10.1016/j.chb.2017.07.012

Mooij, T. Smeets, G. (2009). Modelling and supporting ICT implementation in secondary schools. Computers & Education. 36 (4), 81–265.

Nevo, S., & Wade, M. (2010). The formation and value of IT-enabled resources: Antecedents and consequences of synergistic relationships. MIS Quarterly, 34(1), 163–183.

Niu, M., Wang, Z., and Zhang, Y. (2021). How information and communication technology drives (routine and non-routine) jobs: Structural path and decomposition analysis for China. Telecommunications Policy, 102242. doi:10.1016/j.telpol.2021.102242

Nwankpa, J. and Roumani, Y. (2014). Understanding the link between organizational learning capability and ERP system usage: An empirical examination. Computers in Human Behavior, 33, 224–234. doi:10.1016/j.chb.2014.01.030

Onağ, A. Ozan; Tepeci, Mustafa; Başalp, A. Ayçe (2014). Organizational Learning Capability and its Impact on Firm Innovativeness. Procedia–Social and Behavioral Sciences, 150, 708–717. doi:10.1016/j.sbspro.2014.09.029

Oswald, S. L., Mossholder, K. W., and Harris, S. G. (1994). Vision salience and strategic involvement: Implications for psychological attachment to organization and job. Strategic Management Journal, 15(6), 477–489.

Otieno, O. J. (2012). A Framework for study of the primary teacher training colleges in Kenya. Journal of Information, Communication & Ethics in Society. 8 (1), 40–57.

Parra, C. M., Gupta, M., and Mikalef, P. (2021). Information and communication technologies (ICT)-enabled severe moral communities and how the (Covid19) pandemic might bring new ones. International Journal of Information Management, 57, 102271. doi:10.1016/j.ijinfomgt.2020.1022

Pelgrum, W. J. (2001). Obstacles to the integration of ICT in Education: results from a worldwide educational assessment. Computers and education. 170 (6), 27–64.

Pollman, C. D. (2014). Mercury cycling in aquatic ecosystems and trophic state-related variables-implications from structural equation modeling. Sci. Total Environ. 499, 62–73.

Prasad, V. K., Ramamurthy, K., Naidu, G. M. (2001). The Influence of Internet-Marketing Integration on Marketing Competencies and Export Performance. Journal of International Marketing. 9 (4), 82–110.

Premkumar, G., Ramamurthy, K., and Saunders, C. S. (2005). Information processing view of organizations: An exploratory examination of fit in the context of inter-organizational relationships. Journal of Management Information Systems, 22(1), 257–294.

Rahman, F. (2022). Exploring paratransit service quality based on low-income women's perception: A case study in Dhaka city by structural equation model (SEM). IATSS Research, In press, 1–12, https://doi.org/10.1016/j.iatssr.2021.11.009

Rama Rao, T. P. (2004). ICT and E-Governance for Rural Development, Center for Electronic Governance, Indian Institute of Rural Management. Ahmedabad, Poetics. 34, 211–235.

Ravand, H., R., and Baghaei, P. (2016). Partial least squares structural equation modeling with R. Practical Assessment, Research and Evaluation, 21 (1), 1–16. https://doi.org/10.7275/d2fa-qv48.

Ruiz-Molina, M. E., Gil-Saura, I., Moliner-Vela´zquez, B. (2015). Good environmental practices for hospitality and tourism, the role of information and communication technologies. Management of Environmental Quality: An International Journal. 21 (4), 464–476.

Saeidi, P. Saeidi, S. P., Sofian, S., Saeidi, S. P., Nilashi, M., and Mardani, A. (2019). The Impact of Enterprise Risk Management on Competitive Advantage by Moderating

Role of Information Technology. Computer Standards & Interfaces, 63, 67–82.

Salehan, M., Kim, D. J., and Lee, J-N. (2018). Are There any Relationships Between Technology and Cultural Values? A Country-Level Trend Study of the Association between Information Communication Technology and Cultural Values. Information and Management, 55 (6), 725–745.

Santhanam, R. and Hartono, E. (2003). Issues in linking information technology capability to firm performance. MIS quarterly, 27(1),125–153.

Sar, A., and Misra, S. N. (2020). A study on policies and implementation of information and communication technology (ICT) in educational systems. Materials Today: Proceedings. doi:10.1016/j.matpr.2020.10.507

Sarstedt, M., and Cheah, J. H. (2019). Partial least squares structural equation modeling using SmartPLS: a software review. Journal of Marketing Analytics, 7 (3), 196–202. https://doi.org/ 10.1057/s41270-019-00058-3.

Schermelleh-Engel, K., Moosbrugger, H., and Müller, H. (2003). Evaluating the fit of structural equation models: tests of significance and descriptive goodness-of-fit measures. International Journal of Methods of Psychological Research, 8 (8), 23–74.

Schilke, O. (2014). On the contingent value of dynamic capabilities for competitive advantage: The nonlinear moderating effect of environmental dynamism. Strategic Management Journal, 35(2), 179–203.

Scott-Ladd, B. and Chan, C.C.A. (2004). Emotional intelligence and participation in decision making: strategies for promoting organizational learning and change, Strategic Change. 13 (2), 95–105.

Shahzad, K., Jianqiu, Z., Hashim, M., Nazim, M., and Wang, L. (2020). Impact of using information and communication technology and renewable energy on health expenditure: A case study from Pakistan. Energy, 204, 117956. doi:10.1016/j.energy.2020.117956

Sharifi, A., Naghi Imani, Mo., Eslamieh, F. (2013). Investigation the Role of Information & Communication Technologies on Student's Collaborative Learning. Procedia–Social and Behavioral Sciences. 38, 932–936.

Sook-Ling, L., Ismail, M. A., and Yee-Yen, Y. (2015). Information infrastructure capability and organizational competitive advantage. International Journal of Operations & Production Management, 35(7), 1032–1055.

Spitale, D., Petraglia, A., and Tomaselli, M. (2009). Structural equation modelling detects unexpected differences between bryophyte and vascular plant richness along multiple environmental gradients. Journal of Biogeography, 36 (4), 745–755.

Sutanto, E. M. (2017). The influence of organizational learning capability and organizational creativity on organizational innovation of Universities in East Java, Indonesia. Asia Pacific Management Review, 22(3), 128–135.

Talib. F, Rahman. Z, and Akhtar, A. (2013). An instrument for measuring the key practices of total quality management in ICT industry: an empirical study in India. Service Business, 7(2), 275–306.

Tamilmani, K., Rana, N. P., Nunkoo, R., Raghavan, V., and Dwivedi, Y. K. (2020). Indian travellers' adoption of Airbnb platform. Information Systems Frontiers, 24, 77–96.

Taucher, J., Oschlies, A. (2011). Can we predict the direction of marine primary production change under global warming? Geophysical Research Letters, 38 (2), 1–6.

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. Strategic Management Journal, 18(7), 509–533.

Tong, Y., Yang, X., and Teo, H. H. (2013). Spontaneous virtual teams: Improving organizational performance through information and communication technology. Business Horizons, 56(3), 361–375. doi:10.1016/j.bushor.2013.01.003

Torkayesh, A. E., and Torkayesh, S. E. (2021). Evaluation of information and communication technology development in G7 countries: An integrated MCDM approach. Technology in Society, 66, 101670. doi:10.1016/j.techsoc.2021.101670

Walsh, P. R., and Dodds, R. (2017). Measuring the choice of environmental sustainability strategies in creating a competitive advantage. Business Strategy and the Environment, 26(5), 672–687. https://doi.org/10.1002/bse.1949.

Wang, L. L., and Gao, Y. (2021). Competition network as a source of competitive advantage: The dynamic capability perspective and evidence from China. Long Range Planning, 54 (2), 1–48. https:// doi.org/10.1016/j.lrp.2020.102052.

Wang, J., Jiang, Q., Dong, X., and Dong, K. (2021). Decoupling and decomposition analysis of investments and CO2 emissions in information and communication technology sector. Applied Energy, 302, 117618. doi:10.1016/j.apenergy.2021.11761

Wang, X., Shao, C., Yin, C., and Guan, L. (2022). Exploring the relationships of the residential and workplace built environment with commuting mode choice: A hierarchical cross-classified structural equation model, Transportation Letters, DOI: 10.1080/19427867.2020.1857010

Wang, E. T., Tai, J. C. F., and Grover, V. (2013). Examining the relational benefits of improved inter-firm information processing capability in buyer-supplier dyads. MIS Quarterly, 37(1), 149–173.

Wang, D., Zhou, T., and Wang, M. (2021). Information and communication technology (ICT), digital divide and urbanization: Evidence from Chinese cities. Technology in Society, 64, 101516. doi:10.1016/j.techsoc.2020.101516

Weber, M. M., Kantamneni, S. P., 2002. POS and EDI in retailing: an examination of underlying benefits and barriers. Supply Chain Management: An International Journal 7 (5), 311–317

Welch, E. W., and Feeney, M. K. (2014). Technology in government: How organizational culture mediates information and communication technology outcomes. Government Information Quarterly, 31(4), 506–512. doi:10.1016/j.giq.2014.07.006

White, C., Vanc, A., and Stafford, G. (2010). Internal communication, information satisfaction, and sense of community: The effect of personal influence. Journal of Public Relations Research, 22(1), 65–84.

Wong, K. K. K. (2013). Partial least squares structural equation modeling (PLS-SEM) techniques using Smart PLS. Marketing Bulletin, 24 (1), 1–32.

Xing, W., Ye, X., and Kui, L. (2011.) Measuring convergence of China's ICT industry: an input–output analysis. Telecommunications Policy, 35(4), 301–313.

Yang, W., Li, X. X., Jin, Y. W., et al. (2018). The impact of multiple seashore reclamation activities on vegetation cover in the Yellow River Delta, China: implications based on structural equation modeling. Journal of Coastal Conservation, 22, 283–292.

Yu, T. K., Lin, M. L., and Liao, Y. K. (2017). Understanding factors influencing information communication technology adoption behavior: the moderators of information literacy and digital skills. Computers in Human Behavior, 71, 196–208

Zhang, X., van Donk, D. P., and Jayaram, J. (2020). A multi-theory perspective on enablers of inter-organizational information and communication technology: A comparison of China and the Netherlands. International Journal of Information Management, 54, 102191. doi:10.1016/j.ijinfomgt.2020.1021

Zhang, Z., Yang, W., Ding, J., Sun, T., Liu, H., and Liu, C. (2022). Identifying changes in China's Bohai and Yellow Sea fisheries resources using a causality-based indicator framework, convergent cross-mapping, and structural equation modeling. Environmental and Sustainability Indicators, 14, 1–11.

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Mobile Applications Adoption and Use in Strategic Competitive Intelligence: A Structural Equation Modelling Approach

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ABSTRACT This article examined the key determinants of mobile applications' adoption and use in strategic competitive intelligence. A quantitative research based on a survey of 150 participants drawn from strategic competitive intelligence practitioners and analysts was used to examine and validate the extended UTAUT2 Model to identify the key determinants of mobile applications` adoption and use in SCI. PLS-SEM algorithm was used to analyse data. Findings show that PE, SI, HT, SE, and BI had significant influence over UB while EE, HM, PV, SN, and PR had an insignificant influence. Adoption and use of mobile applications was considered a planned behaviour. Perhaps the most important findings for SCIPs relate to the importance-performance map analysis that showed the greater absolute importance of self-efficacy on use behaviour. Previous empirical studies have largely ignored the influence of cognitive psychological perceptive which this study addressed by examining key determinants of behaviour intention and user behaviour.

KEYWORDS: Strategic Competitive Intelligence; UTAUT; UTAUT2; Adoption; Mobile Applications; Use behaviour; Unified Theory of Acceptance and Use of Technology

1. INTRODUCTION

Competitive intelligence has become a global phenomenon in today`s environment that is characterised by global competition. Big data analytics, AI, IoT, 5G/6G, cybersecurity, as well as the adoption and use of mobile applications such as WhatsApp, Facebook, Instagram, Twitter, and Telegram have enabled high-speed availability, transfer, and analysis of large amounts of data collected and accumulated by individuals and organisations over the years (Maune, 2021). In the last decades, companies have invested resources dramatically in Competitive Intelligence (CI) systems, which enabled business users to discover their rich, reliable, and relevant data.

CI is providing companies with the tools to make informed decisions. It is enabling companies to keep ahead of the competition and industry trends. The past decade has seen a tremendous growth in mobile applications usage the world over. By the end of 2020, reports estimated that there were about 3.5 billion

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smartphone users worldwide (Maune, 2021). According to statista.com website, an estimated 1.4 billion smartphones were sold in 2020 alone. This has increased the demand and use of mobile applications by companies. What is not known, however, are the major key determinants for the adoption and use of mobile applications in SCI. The influence these determinants have on behaviour intentions and use behaviour of mobile applications in SCI is still mystery.

Thus far, CI research has focused primarily on the same phenomenon, how to gather information to make better decisions (Solberg, 2019 cited by Maune, 2021). Research is now starting to address CI from a business intelligence perspective, big data analytics, and Artificial Intelligence this time around using algorithms as a predictive tool. Previously, CI research was more concerned with web and desktop applications but there is a rapid shift towards mobile applications due to information available anytime, anywhere from everyone who has a phone. This sudden shift has also been influenced by an increase in the number of mobile application and the number of active users per day (Maune, 2021). Mobile intelligence has now combined BI, transactions, and multimedia. Mobile applications have become the biggest data mining fields ever found before. Those companies that are ignoring mobile applications for intelligence are doing so at their own peril. What is currently unknown is how deep these data mining fields are and for how long they can be relied on by intelligentsia?

What business leaders often fail to understand are the key determinants for the adoption and use of mobile applications in SCI? This usually serves as a differentiator among CI practitioners and analysts. With the development of a number of mobile applications and the increase in mobile penetration globally, it is critical for SCI practitioners and analysts to appreciate the key determinants for the adoption and use of mobile applications in SCI. Mobile applications have become the focal area for new ideas and big data analysis with more and more organisations turning to these platforms to map their strategies. In this dynamic world, business leaders need to know what their competitors are up to. Additionally, they need to gather the trends, patterns, and relationships they see emerging across mobile platforms. The question that should be asked is, 'how do we capitalise on this intelligence?' Mobile applications platforms have become new areas to look for business opportunities. CI is very important in this regard and should be prioritised to identify these opportunities.

The aim of this study was to empirically examine and validate the proposed path analysis model (Maune, 2021). The model was an extension of the UTAUT2. We analysed the data to find key determinants for the adoption and use of mobile applications in SCI. Behaviour intention and use behaviour from a cognitive psychological perspective was used. More specifically, the major objectives of this research were; (i) to establish the key determinants for the adoption and use of mobile applications in SCI, (ii) to examine the influence of behaviour intention on use behaviour in the adoption and use of mobile applications in SCI, and (iii) to develop a path analysis model suitable for the adoption and use of mobile applications in SCI.

To achieve this, the authors adopted a positivism research philosophy. The authors used a deductive research approach to gather data through an online survey sent to CI practitioners and analysts as well as those involved in decision making in various organisations. An explanatory research design assisted the researcher in examining the relationship between variables as well as assisting in identifying significant paths within the path analysis model. One hundred and fifty online questionnaires were sent through different online platforms with 98 responses received. The findings have both managerial and practical implications; their contribution is scientific, practical, societal, political, and educational.

The remainder of the article will be as follows, first a literature review that elucidates the proposed path analysis model and the hypotheses will be followed by the research method used. This will address the research respondents and procedure, measurement, approach to SEM, analysis, model adopted, and the structural model analysis. Thereafter, discussion of results will follow. The study`s implications for research and practice as well as its limitations. The study conclusions will be given and the article will end with a reference list.

2. LITERATURE REVIEW

In this section, the study presents an overview of the extended unified theory of acceptance and use of technology (Venkatesh, Thong, and Xu, 2012) and explains the basic modifications made to the extended unified theory of acceptance and use of technology (UTAUT2) model

to fit the study context. The section also discusses the new constructs that were added to the UTAUT2 (that is, perceived risk, trust, subjective norm, and self-efficacy) as discussed by Maune (2021).

2.1 Theoretical framework

2.1.1 Unified Theory of Acceptance and Use of Technology (UTAUT2)

Based on a review of the extant literature, Venkatesh, Morris, Davis, and Davis (2003) developed UTAUT as a comprehensive synthesis of prior technology acceptance research. UTAUT has four key constructs (performance expectancy, effort expectancy, social influence, and facilitating conditions) that influence behavioural intention to use a technology and/or technology use. We adapt these constructs and definitions from UTAUT to the consumer technology acceptance and use context. Here, *performance expectancy* is defined as the degree to which using a technology will provide benefits to consumers in performing certain activities; *effort expectancy* is the degree of ease associated with consumers' use of technology; *social influence* is the extent to which consumers perceive that important others (for example, family and friends) believe they should use a particular technology; and *facilitating conditions* refer to consumers' perceptions of the resources and support available to perform a behaviour (Venkatesh et al., 2003; Brown and Venkatesh, 2005). According to the UTAUT, performance expectancy, effort expectancy, and social influence are theorised to influence behavioral intention to use a technology, while behavioral intention and facilitating conditions determine technology use. Also, individual difference variables, namely age, gender, and experience are theorised to moderate various UTAUT relationships (Venkatesh et al., 2012). The lighter lines in Figure 1 show the original UTAUT along with the one modification noted above that was necessary to make the theory applicable to this context.

Hedonic motivation is defined as the fun or pleasure derived from using a technology, and it has shown to play an important role in determining technology acceptance and use (Brown and Venkatesh, 2005). In IS research, such hedonic motivation (conceptualised as perceived enjoyment) has been found to influence technology acceptance and use directly (van der Heijden, 2004; Thong, Hong, and Tam, 2006). In the consumer context, hedonic motivation has also been found to be an important determinant of technology acceptance and use (Childers, Carr, Peck, and Carson, 2001; Brown and Venkatesh, 2005). Thus, we add hedonic motivation as a predictor of consumers' behavioural intention to use a technology (Venkatesh et al., 2012).

An important difference between a consumer use setting and the organisational use setting, where UTAUT was developed from, is that, consumers usually bear the monetary cost of such use while employees do not. The cost and pricing structure may have a significant impact on consumers' technology use. For instance, there is evidence that the popularity of short messaging services (SMS) in China is due to the low pricing of SMS relative to other types of Mobile Internet Applications (Chan, Gong, Xu, and Thong, 2008). In marketing research, the monetary cost/price is usually conceptualised together with the quality of products or services to determine the perceived value of products or services (Zeithaml, 1988). We follow these ideas and define *price value* as consumers' cognitive tradeoff between the perceived benefits of the application and the monetary cost for using it (Dodds, Monroe, and Grewal, 1991). The price value is positive when the benefits of using a technology are perceived to be greater than the monetary cost and such price value has a positive impact on intention (Venkatesh et al., 2012). Thus, price value was added as a predictor of behavioral intention to use a technology (Venkatesh et al., 2012).

Prior research on technology use has introduced two related yet distinct constructs, namely *experience* and *habit*. Experience, as conceptualised in prior research (Venkatesh et al., 2003; Kim and Malhotra, 2005), reflects an opportunity to use a target technology and is typically operationalised as the passage of time from the initial use of a technology by an individual. For instance, Kim, Malhotra, and Narasimhan (2005)`s measure has five categories with different periods of experience**.** Venkatesh et al. (2003) operationalised experience as three levels based on passage of time: post-training was when the system was initially available for use; 1 month later; and 3 months later. Habit has been defined as the extent to which people tend to perform behaviours automatically because of learning (Limayem, Hirt, and Cheung, 2007), while Kim et al. (2005) equate habit with automaticity. Venkatesh et al. (2012) argue that although conceptualised rather similarly, habit has been operationalised in two distinct ways:

first, habit is viewed as prior behavior (see Kim and Malhotra, 2005); and second, habit is measured as the extent to which an individual believes the behavior to be automatic (Limayem et al., 2007). Consequently, there are at least two key distinctions between experience and habit. One distinction is that experience is a necessary but not sufficient condition for the formation of habit. A second distinction is that the passage of chronological time (experience) can result in the formation of differing levels of habit depending on the extent of interaction and familiarity that is developed with a target technology (Venkatesh et al., 2012). For instance, in a specific period of time, say 3 months, different individuals can form various levels of habit depending on their use of a target technology (Venkatesh et al., 2012). This is perhaps what prompted Limayem et al. (2007) to include prior use as a predictor of habit; and likewise, Kim and Malhotra (2005) controlled for experience with the target technology in their attempt to understand the impact of habit on technology use. Ajzen and Fishbein (2005) also noted that feedback from previous experiences will influence various beliefs and, consequently, future behavioral performance. In this context, habit is a perceptual construct that reflects the results of prior experiences (Venkatesh et al., 2012).

Venkatesh et al. (2012) argue that the empirical findings about the role of habit in technology use have delineated different underlying processes by which habit influences technology use. Related to the operationalisation of habit as prior use, Kim and Malhotra (2005) found that prior use was a strong predictor of future technology use. Given that there are detractors to the operationalisation of habit as prior use (see Ajzen, 2002), some work, such as that of Limayem et al. (2007), has embraced a survey and perception-based approach to the measurement of habit. Such an operationalisation of habit has been shown to directly affect technology use over and above the effect of intention and moderate the effect of intention on technology use such that intention becomes less important with increasing habit (Limayem et al., 2007). Similar findings in the context of other behaviors have been reported in psychology research (see Ouellette and Wood, 1998).

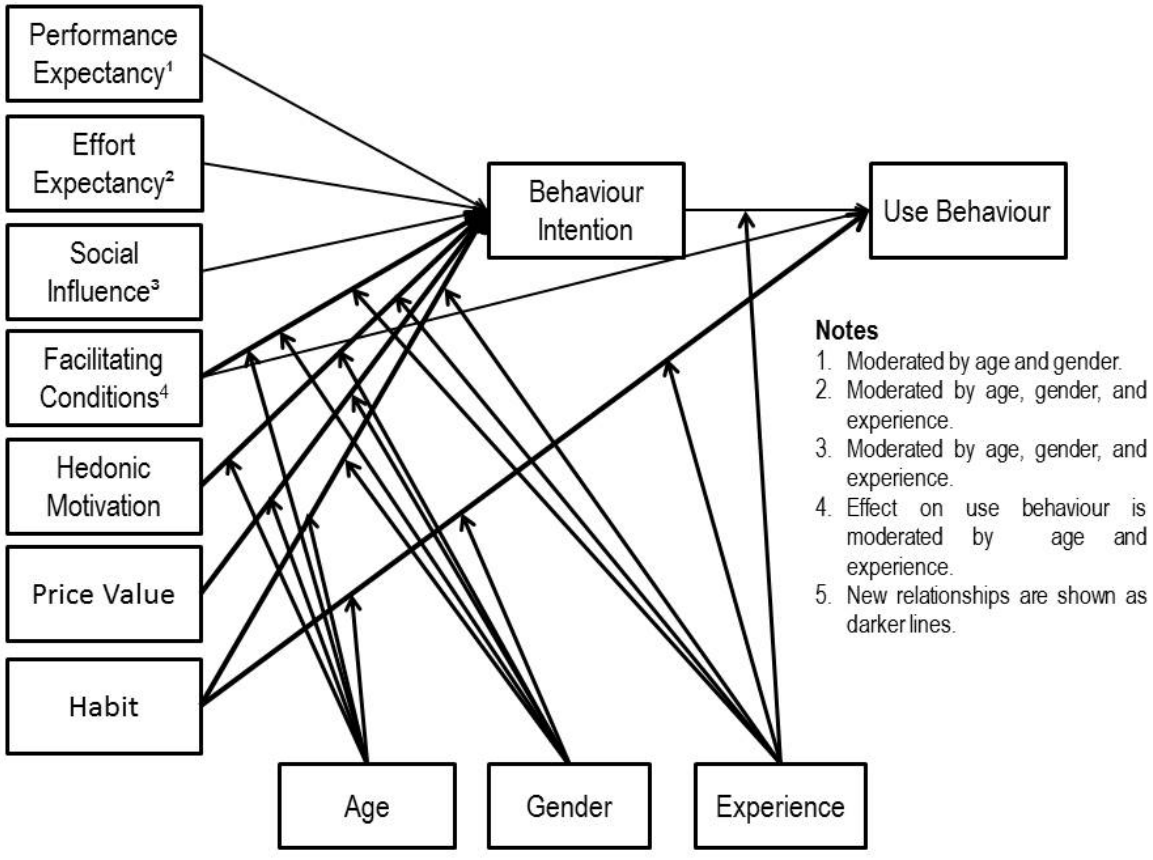

Figure 1 UTAUT2 Model.
Source: Adapted from Venkatesh et al. (2012).

2.2 Conceptual framework

2.2.1 Identifying constructs to incorporate into UTAUT2

This section presents an overview of the four constructs that were added to UTAUT2 and discusses them in detail (see Maune, 2021). The constructs are perceived risk, trust, subjective norms, and self-efficacy. This approach complements the UTAUT2 constructs as given by Venkatesh et al. (2003) and Venkatesh et al. (2012). The constructs were identified through a literature review carried out by Maune (2021). The conceptual framework developed in the previous study (Maune, 2021) formed the basis of the current study. In technology acceptance and use, perceived risk and trust have proven to be strong predictors of behavioural intention (see Maune, 2021). Risk has been considered a strong driver of behavioural intention and use behaviour of mobile applications. Recent developments in the operations of big technology companies have caused risk and trust to be amongst the strongest predictors of behavioural intention and use behaviour of mobile applications in gathering SCI data. The use of mobile applications in SCI gathering has become popular recently. Technology developers are coming up with useful tools to gather SCI data from mobile application platforms. The platforms include Facebook, Whatsapp, and Instagram among others. These platforms are proving to be rich mines for SCI.

Subjective norm and self-efficacy were borrowed from the Theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1980) and the Theory of Planned Behaviour (TPB) (Ajzen, 1991). Fundamental to the TPB and other reasoned action models is the idea that behaviour is guided by intentions (Ajzen, 2012). Subjective norms are the individual's beliefs about whether significant others think he or she should engage in the behaviour and are assumed to capture the extent of perceived social pressures exerted on individuals to engage in certain behaviour. O'connor and Armitage (2003) argue that subjective norms are a function of normative beliefs. To them, normative beliefs represent pressures that are generated from specific others, such as parents and friends with respect to the behaviour in question. Normative beliefs and the personal motivation to comply with such beliefs and significant others determine subjective norms (O'connor and Armitage, 2003). With respect to the operational definition of subjective norms, Ajzen and Fishbein (1980) claim that subjective norms represent actors' perceptions about pressures generated from important significant others with respect to the behaviour (Chatzisarantis and Biddle, 1998).

Measures of subjective norms also respect a personal tendency to comply with pressures generated from significant others. According to the self-determination theory, psychological events that include compliance and pressure, represent control, and therefore, it is argued that subjective norms cover only the controlling dimension of personal experience. The subjective norm is also based on salient beliefs, called normative beliefs, about whether particular referents think the respondent should or should not do the action in question (East, 1993). East (1993) further argues that like expected values, these referent influences are covered by two measures: *(n)*, the likelihood that the referent holds the normative belief, and *(m),* the motivation to comply with the views of the referent. Thus $\sum n_i m_i$ is the determinant of the subjective norm.

According to the TPB model, subjective norms predict the intention, which in turn predicts use behaviour. Subjective norm is a strong indicator of individual use behaviour (Fishbein and Ajzen, 1975; Ha, 1998; Broadhead-Fearn and White, 2006; Yadav, Chauhan, and Pathak, 2015). According to Bandura (1997), self-efficacy refers to beliefs in one`s capabilities and knowledge to organise and execute the courses of action required to produce/perform certain behaviour/attainments. Studies by Bandura (1986), Zimmerman, Bandura, and Martinez-Pons (1992), Zhao, Seibert, and Hills (2005), and Bailey and Austin (2006) have identified self-efficacy as a much more consistent predictor of behaviour and behavioural change. Clearly, one way in which self-efficacy can influence the performance of difficult behaviours is by its effect on perseverance. The more people believe that they have the capacity to perform an intended behaviour, the more likely they are to persevere and, therefore to succeed (Ajzen, 2012). A considerable body of research attests to the powerful effects of self-efficacy beliefs on motivation and performance (see Bandura and Locke, 2003). Subjective norms are used to complement social influence while self-efficacy was used to complement performance expectancy and effort expectancy. Research by Roy (2017) shows that subjective norms and self-efficacy were strong predictors of behavioural intention and use behaviour in mobile applications.

Venkatesh et al. (2012) argue that UTAUT and related models hinge on intentionality as a key underlying theoretical mechanism that drives behaviour. Many, including detractors of this class of models, have argued that the inclusion of additional theoretical mechanisms is important (Venkatesh et al., 2012).

These constructs have become critical in the recent past in determining the adoption and use of mobile applications in SCI gathering. With SCI taking major strides in helping companies achieving sustainable competitive advantage, mobile applications have become the critical mining fields for SCI gathering.

Based on the study by Maune (2021) as well as the above explanations, perceived risk, trust, subjective norms, and self-efficacy were integrated into UTAUT2 as shown in figure 2.

2.2.2 Hypothesis development

This section presents the hypotheses that were developed to validate the proposed model in figure 2. These hypotheses were derived from the review of theoretical and empirical studies in the sections above. These hypotheses are to validate and test the proposed path analysis model by Maune (2021). Therefore, we hypothesised the following:

H1. The greater the individual`s performance expectancy regarding mobile apps use, the higher the level of behaviour intentions to use mobile apps in SCI.

H2. The greater the individual`s effort expectancy regarding mobile apps use, the higher the level of behaviour intentions to use mobile apps in SCI.

H3. The greater the individual`s social influence regarding mobile apps use, the higher the level of behaviour intentions to use mobile apps in SCI.

H4. The greater the facilitating conditions are perceived as favourable to mobile apps use, the higher the level of behaviour intentions to use mobile apps in SCI.

H5. The greater the hedonic motivation is perceived as favourable to mobile apps use,

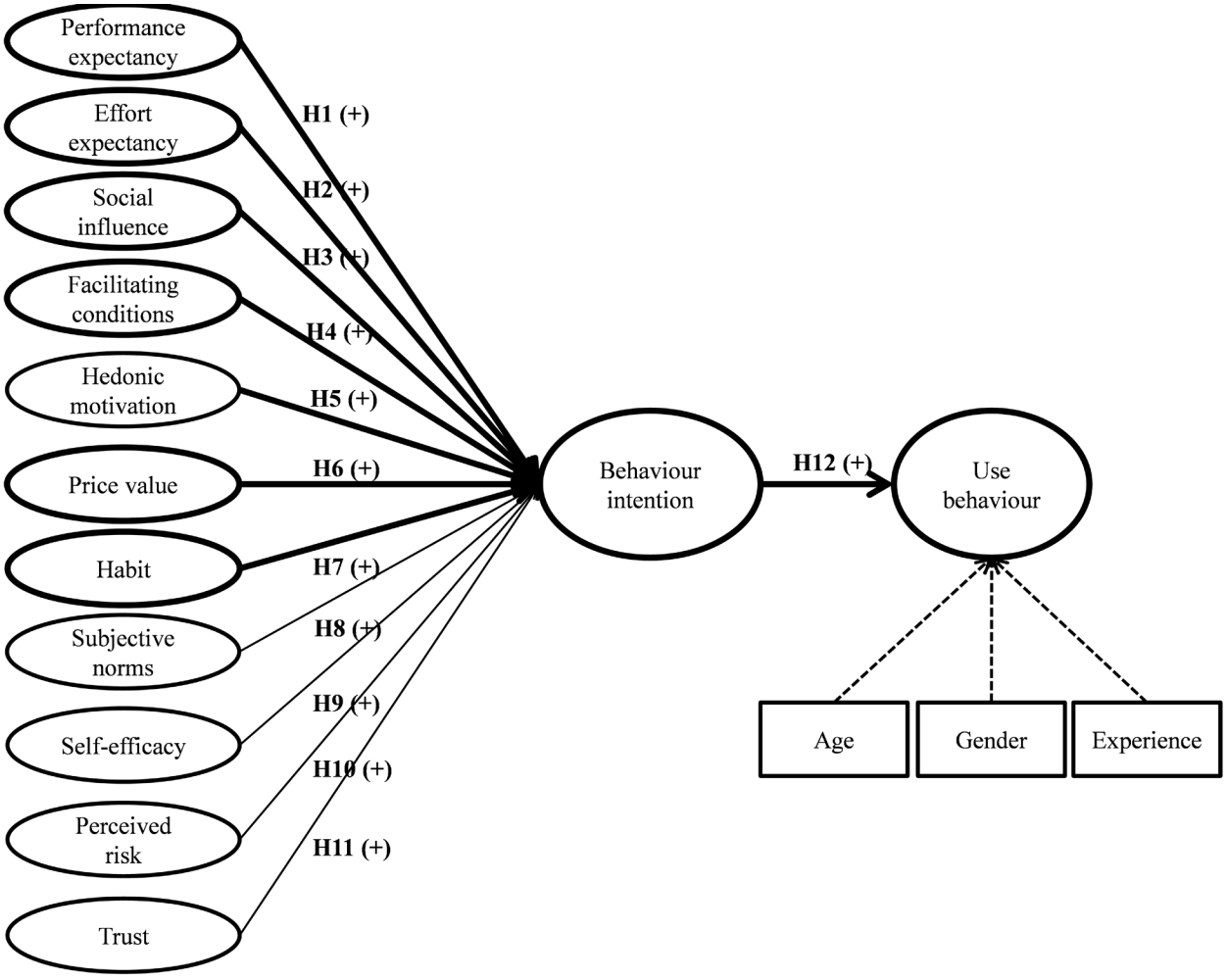

Figure 2. Research model.
Source: Adapted from Maune (2021).

the higher the level of behaviour intentions to use mobile apps in SCI.

H6. The greater the price value is perceived as favourable to mobile apps use, the higher the level of behaviour intentions to use mobile apps in SCI.

H7. The greater the individual`s habit regarding mobile apps use, the higher the level of behaviour intentions to use mobile apps in SCI.

H8. The greater the subjective norms are perceived as favourable to mobile apps use, the higher the level of behaviour intentions to use mobile apps in SCI.

H9. The greater the individual`s self-efficacy regarding mobile apps use, the higher the level of behaviour intentions to use mobile apps in SCI.

H10. The greater the perceived risk is seen as favourable to mobile apps use, the higher the level of behaviour intentions to use mobile apps in SCI.

H11. The greater the individual`s trust regarding mobile apps use, the higher the level of behaviour intentions to use mobile apps in SCI.

H12. The greater the individual`s behaviour intentions to use mobile apps, the greater the likelihood of the individual`s use behaviour of mobile apps in SCI.

3. METHOD

This article targeted SCIPs and analysts as well as those in decision making. This study was conducted in the context of mobile applications use in SCI. All applications that can be downloaded from application stores such as Play Store and App Store among others were evaluated within the scope of mobile applications. These applications have made it easy for individuals and organizations to access large amounts of data. Mobile applications have both increased and strengthened the role of SCI in decision making globally. They have become big data mines for gathering intelligent information for decision making in competitive environments.

3.1 Respondents and procedure

One hundred and fifty questionnaires were sent via email and WhatsApp platforms to SCI practitioners and analysts. The questionnaire was created on the Google Forms platform. The link generated was then sent to the respondents. The survey needed approximately 15 to 20 minutes to complete. Before this, a pilot questionnaire was sent to five people with and without CI knowledge to elicit salient features, ambiguous, negatively worded, and difficult questions. Such questions were deleted or rephrased in the main questionnaire. Completed questionnaires were returned, automatically through the Google forms platform to the corresponding author by 98 respondents (65.3%). After cleaning the data, that is, removing observations with missing data, and suspected unengaged respondents, 96 (64% response rate) were retained for analysis. The sample size used was guided by Marcoulides and Saunders (2006). In this study, unengaged respondents were defined as those who recorded the same response for all consecutive items (for example, a 7 throughout all the observed variables). Table 1 denotes the demographic descriptive statistics of the study.

Table 1 Demographic Descriptive Statistics.

Variable	Category	Frequency	Percentage
Gender	Male	74	77%
	Female	22	23%
Age	<20	-	-
	21 – 30	12	12.5%
	31 – 40	37	38.5%
	41 – 50	11	11.5%
	>50	36	37.5%
Experience	Up to 1yr	9	9.4%
	1 to 2yrs	-	-
	2 to 3yrs	5	5.2%
	3 to 4yrs	4	4.2%
	5yrs or more	78	81.2%
Education	High School	-	-
	College	-	-
	Bachelor`s Degree	1	1%
	Master`s Degree	55	57.3%
	PhD	40	41.7%

Source: Authors` compilation.

3.2 Measurement

This article adapted the measurement scales from prior research (Table 2). The latent variables and the measurement items are as given in Table 2. The scales for the UTAUT2 constructs, that is, performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, habit, and behavioral intention were adapted from

Venkatesh et al. (2012). The perceived risk scale was drawn from Abrahão et al. (2016), and the scale for trust was adapted Groß (2015), while the scales for subjective norms, self-efficacy, and use behaviour were adapted from Shneor and Munim (2019).

All items were measured using a seven-point Likert–type scale, with the anchors being "completely disagree" and "completely agree." Gender was coded using 1 or 2 dummy variables where 1 represented men and 2, women. Age was measured in years, while experience was also measured in years. Use behaviour was measured using both scale and frequency of mobile applications use. The researcher created an online questionnaire using Google forms in English and was reviewed by university staff, SCIPs and university students for content validity, completion time, and simplicity. The online questionnaire was pilot tested among five selected individuals from the researcher`s WhatsApp professional groups who were not part of the main survey. Preliminary evidence showed that the scales were reliable and valid.

Table 2. Survey Variables, Measurement Items, Factor Loadings, and Sources.

Latent variable	Measurement items	Factor loadings	Source
PE (*performance expectancy)*	PE1. I find mobile Apps useful in my daily life.	0.995	PE1-4 adapted and modified from "performance expectancy" in and Venkatesh et al. (2003) and Venkatesh et al. (2012).
	PE2. Using mobile Apps increases my chances of achieving things that are important to me.	*Removed*	
	PE3. Using mobile Apps helps me accomplish things more quickly.	0.824	
	PE4. Using mobile Apps increases my productivity.	*Removed*	
EE (*effort expectancy)*	EE1. Learning how to use mobile Apps is easy for me.	0.819	EE1-4 adapted and modified from "effort expectancy" in and Venkatesh et al. (2003) and Venkatesh et al. (2012).
	EE2. My interaction with mobile Apps is clear and understandable.	0.848	
	EE3. I find mobile Apps easy to use.	0.798	
	EE4. It is easy for me to become skillful at using mobile Apps.	*Removed*	
SI (*social influence)*	SI1. People who are important to me think that I should use mobile Apps.	0.710	SI1-3 adapted and modified from "social influence" in Venkatesh et al. (2012) and Venkatesh et al. (2003) for SI1-2.
	SI2. People who influence my behaviour think that I should use mobile Apps.	0.999	
	SI3. People whose opinions I value prefer that I use mobile Apps.	*Removed*	
FC (*facilitating conditions)*	FC1. I have the resources necessary to use mobile Apps.	*Removed*	FC1-4 adapted and modified from "facilitating conditions" in Venkatesh et al. (2003) and Venkatesh et al. (2012).
	FC2. I have the knowledge necessary to use mobile Apps.	*Removed*	
	FC3. Mobile Apps are compatible with other technologies I use.	*Removed*	
	FC4. I can get help from others when I have difficulties using mobile Apps.	*Removed*	
HM (*hedonic motivation)*	HM1. Using mobile Apps is fun.	0.914	HM1-3 adapted and modified from "hedonic motivation" in Venkatesh et al. (2012).
	HM2. Using mobile Apps is enjoyable.	0.959	
	HM3. Using mobile Apps is very entertaining.	*Removed*	
PV (*price value)*	PV1. Mobile Apps is reasonably priced.	1.000	PV1-3 adapted and modified from "price value" in Venkatesh et al. (2012).
	PV2. Mobile Apps is a good value for the money.	*Removed*	
	PV3. At the current price, mobile Apps provide good value.	*Removed*	
HT (*habit)*	HT1. The use of mobile apps has become a habit for me.	1.000	HT1-4 adapted and modified from "habit" in Venkatesh et al. (2012).
	HT2. I am addicted to using mobile Apps.	*Removed*	
	HT3. I must use mobile Apps.	*Removed*	
	HT4. Using mobile Apps has become natural to me.	*Removed*	

PR (*perceived risk)*	PR1. I would not feel completely safe to provide personal information through mobile apps.	0.782	PR1-4 adapted and modified from "risk" in Abrahão et al. (2016).
	PR2. I am worried about the future use of mobile apps platforms because other people might be able to access my data.	0.945	
	PR3. I do not feel protected when sending confidential information via mobile apps platforms.	*Removed*	
	PR4. The likelihood that something wrong will happen with the mobile apps platforms is high.	0.819	
TT *(trust)*	TT1. I think they are honest.	*Removed*	TT1-5 adapted and modified from "trust" in Groß (2015).
	TT2. I think they are trustworthy.	*Removed*	
	TT3. I think they provide good services to users.	*Removed*	
	TT4. I think they care about their users and take their concerns seriously.	*Removed*	
	TT5. I think they keep users' security and privacy in mind.	*Removed*	
SN *(subjective norms)*	SN1. People who are important to me think that I should use mobile apps in SCI.	0.827	SN1-4 adapted and modified from "subjective norms" in Shneor and Munim (2019).
	SN2. People who influence my behavior encourage me to use mobile apps in SCI.	0.864	
	SN3. My colleagues think that I should use mobile apps in SCI.	0.917	
	SN4. My friends think that I should use mobile apps in SCI.	*Removed*	
SE (self-efficacy)	SE1. I have confidence in my ability to use mobile apps platforms in SCI.	*Removed*	SE1-4 adapted and modified from "subjective norms" in Shneor and Munim (2019).
	SE2. I have the expertise needed to use mobile apps.	0.627	
	SE3. I am confident in my ability to navigate and use mobile apps in SCI.	0.906	
	SE4. I am confident in my ability to use mobile apps platforms in SCI.	0.922	
BI (*behavioural intention)*	BI1. I intend to continue using mobile apps in SCI in the future.	1.000	BI1-3 adapted and modified from "behavioural intention" in and Venkatesh et al. (2003) and Venkatesh et al. (2012).
	BI2. I will always try to use mobile apps in SCI.	*Removed*	
	BI3. I plan to continue to use mobile apps in SCI frequently.	*Removed*	
UB (use *behaviour)*	UB1. I frequently use mobile apps in SCI.	0.890	UB1-2 adapted and modified from "subjective norms" in Shneor and Munim (2019).
	UB2. I spend much effort in using mobile apps in SCI.	0.887	
	FREQUENCY: Roughly estimating please indicate how many times have you used mobile apps platforms in SCI in the past year? (Please indicate the number of times).	1.000	

3.3 Approach to structural equation modelling

There are several distinct approaches to SEM This study adopted the approach by Maune, Matanda, and Mundonde (2021) the Partial Least Squares (PLS) using SmartPLS 3 software to analyse data. The PLS-SEM was used because of the small sample size and its predictive accuracy. Despite its limitations, PLS-SEM is useful in applied research projects and has been deployed in fields such as behavioural sciences, marketing, organisation, management information system, and business strategy (Maune et al., 2021). The data set was first cleaned before imported into SmartPLS 3.

3.4 Analysis

The PLS path modeling estimation for this study is shown in Fig. 3. The following observations came out of the path analysis model:

3.4.1 Reflective measurement model

The study adopted a reflective measurement model. Each reflective indicator is related to a specific construct or latent variable by a simple regression (Maune et al., 2021).

As part of the measurement model evaluation, some items (see table 2) were omitted from the analysis due to high cross-loading and low factor loadings (<0.600) (Gefen and Straub, 2005). To test the reliability of the constructs, the study used Cronbach`s alpha and composite reliability (CR) (Table 3). All the CRs were higher than the recommended value of 0.700 (Hair et al., 2017). Cronbach`s alpha of each construct exceeded the 0.700 thresholds. Convergent validity was acceptable because the Average Variance Extracted (AVE) were all above 0.500 (Bagozzi and Yi, 1988). The results for reliability and validity, along with the factor loadings for the items are as shown in Table 3. Discriminant validity was assessed by the Fornell-Larcker criterion. Table 4 shows

Table 3 Loadings, Collinearity, Reliability, and Validity.

	Loadings	VIF	Cronbach`s Alpha	Composite Reliability	AVE
PE1	0.995	2.400	0.866	0.909	0.834
PE3	0.824	2.400			
EE1	0.819	1.459	0.760	0.862	0.676
EE2	0.848	1.683			
EE3	0.798	1.538			
SI1	0.710	1.856	0.809	0.855	0.751
SI2	0.999	1.856			
HM1	0.914	2.380	0.865	0.935	0.877
HM2	0.959	2.380			
PV2	1.000	1.000	1.000	1.000	1.000
HT1	1.000	1.000	1.000	1.000	1.000
SN1	0.827	1.599	0.841	0.903	0.757
SN2	0.864	2.550			
SN3	0.917	2.637			
SE2	0.627	1.349	0.785	0.866	0.689
SE3	0.906	2.203			
SE4	0.922	2.075			
PR1	0.782	2.980	0.833	0.887	0.725
PR2	0.945	3.546			
PR4	0.819	1.528			
BI1	1.000	1.000	1.000	1.000	1.000
UB1	0.890	1.506	0.734	0.883	0.790
UB2	0.887	1.506			

Table 4 Fornell-Larcker Criterion.

	BI	EE	HM	HT	PE	PR	PV	SE	SI	SN	UB
BI	*1.000*										
EE	0.743	*0.822*									
HM	0.710	0.736	*0.937*								
HT	0.518	0.298	0.514	*1.000*							
PE	0.471	0.548	0.554	0.010	*0.913*						
PR	0.179	0.142	-0.138	-0.385	0.047	*0.851*					
PV	0.501	0.579	0.619	0.400	0.230	0.021	*1.000*				
SE	0.810	0.720	0.603	0.499	0.105	0.056	0.443	*0.830*			
SI	0.453	0.449	0.382	0.566	0.397	-0.102	0.404	0.458	*0.867*		
SN	0.547	0.623	0.521	0.358	0.448	-0.151	0.639	0.570	0.699	*0.870*	
UB	0.664	0.675	0.678	0.701	0.264	0.038	0.650	0.650	0.442	0.475	*0.889*

Note: Values in Italic Represent Square-roots of AVE.

Table 5 Heterotrait-Monotrait Ratio (HTMT).

	BI	EE	HM	HT	PE	PR	PV	SE	SI	SN	UB
BI	-										
EE	0.848										
HM	0.742	0.890									
HT	0.518	0.404	0.557								
PE	0.350	0.604	0.528	0.267							
PR	0.137	0.324	0.261	0.428	0.255						
PV	0.501	0.674	0.641	0.400	0.227	0.200					
SE	0.825	0.886	0.623	0.562	0.373	0.232	0.510				
SI	0.304	0.489	0.380	0.474	0.271	0.204	0.308	0.341			
SN	0.574	0.770	0.575	0.396	0.533	0.345	0.703	0.630	0.675		
UB	0.775	0.893	0.829	0.818	0.312	0.194	0.759	0.810	0.428	0.636	

Table 6 Mean, STDEV, T-Values, P-Values, Confidence Intervals, R^2, and Q^2.

Hypothesis	Rel ationship	β	STDEV	T Statistics	P Values	2.50%	97.50%
H_1	PE -> BI	0.724	0.348	2.083	0.037	0.414	1.727
H_2	EE -> BI	-0.210	0.233	0.900	0.368	-0.595	0.197
H_3	SI -> BI	-0.364	0.189	1.922	0.055	-1.108	-0.145
H_5	HM -> BI	-0.246	0.352	0.700	0.484	-1.145	0.240
H_6	PV -> BI	0.173	0.322	0.538	0.591	-0.192	0.972
H_7	HT -> BI	0.503	0.191	2.637	0.008	0.252	1.148
H_8	SN -> BI	-0.011	0.419	0.026	0.980	0.393	0.717
H_9	SE -> BI	0.865	0.425	2.036	0.042	0.562	1.873
H_{10}	PR -> BI	0.244	0.257	0.951	0.342	-0.324	0.658
H_{12}	BI -> UB	0.664	0.053	12.623	0.000	0.545	0.752
		R^2	**R^2 Adjusted**	**Q^2**			
	BI	0.931	0.924	0.906			
	UB	0.441	0.435	0.344			

that the square root of AVE for the construct was greater than the inter-construct correlation (Fornell and Larcker, 1981). Discriminant validity was also assessed by the Heterotrait-Monotrait ratio of correlations (Henseler et al., 2015), with all values below the threshold of 0.900 implying the establishment of discriminant validity (see Table 5).

3.4.2 Structural model

After confirming the reliability and validity of the construct measures, the results of the structural model were evaluated. Maune et al. (2021) citing Tenenhaus et al. (2005) and Avkiran (2018) argue that the structural model analysis is done to provide supporting evidence to the theoretical model:

$$\xi_j = \beta_{jo} + \sum_i \beta_{ji}\,\xi_j + v_j$$

"Where: ξ_j is the endogenous construct and ξ_i represents the exogenous constructs, while β_{jo} is the constant term in this (multiple) regression model, β_{ij} are the regression coefficients, and v_j is the error term; the predictor specification condition applies."

The structural model reflects the paths hypothesised in the research framework. The structural model was assessed based on the R^2, Q^2, and significance of paths. The goodness fit of the model is determined by the strength of each structural path determined by the R^2 value for the dependent variable, the value for R^2 should be equal to or over 0.1 (Falk and Miller, 1992). The results in table 6 show that all R^2 values are over 0.1. Hence, the predictive capability was established. Further, Q^2 establishes the predictive relevance of the endogenous constructs. Predictive relevance of the model is achieved when Q^2 is above zero (0). The results shows that there is significance in the prediction of the constructs (see table 6).

The structural model was also checked for collinearity issues by examining the VIF values

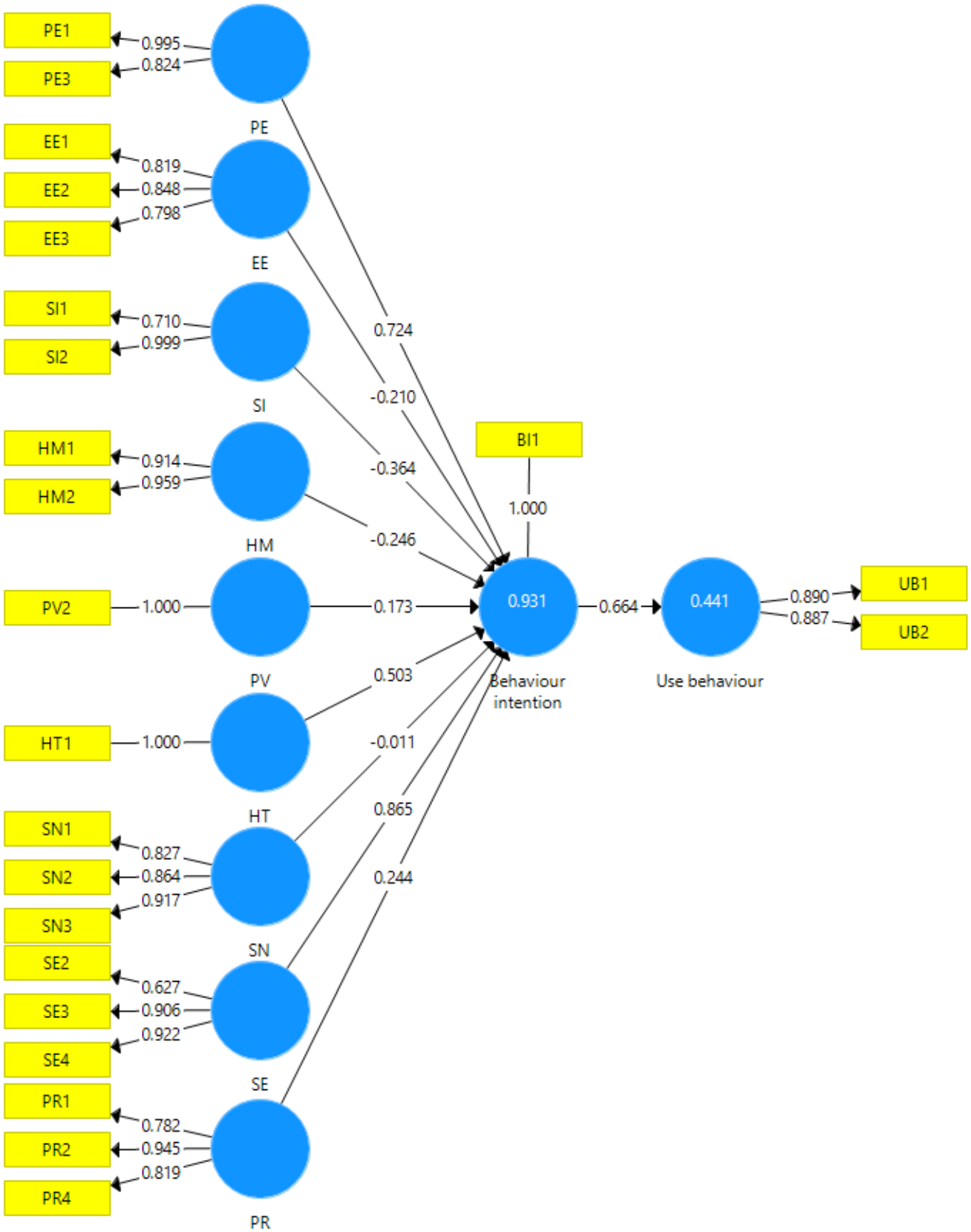

Figure 3 SEM model and PLS-SEM results.

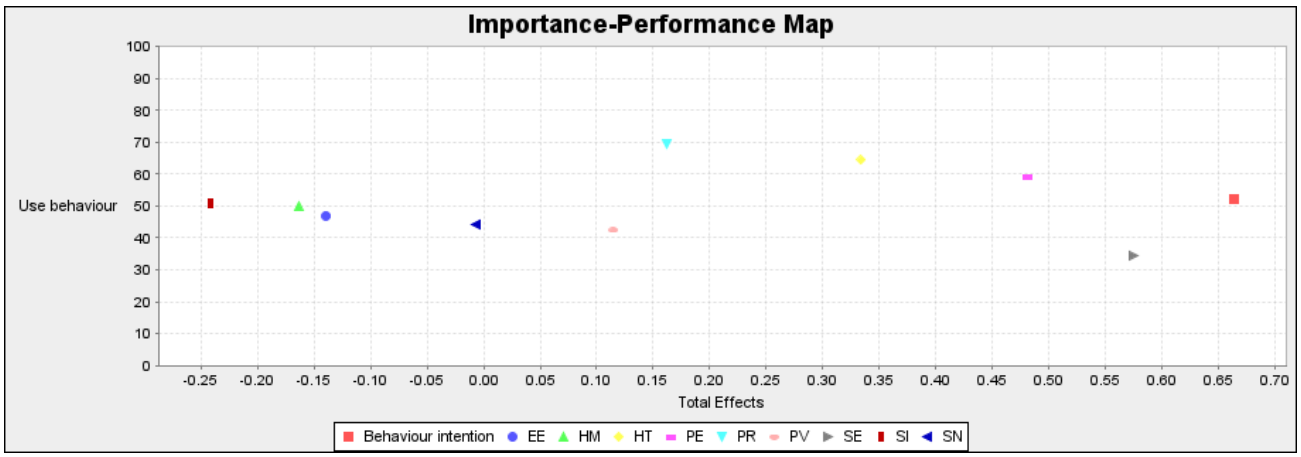

Figure 4 Importance-Performance Map Analysis.

of all sets of predictor constructs in the structural model. The results in Table 3 show the VIF values of all combinations of endogenous constructs and corresponding exogenous constructs. As can be seen in table 3, all VIF values are clearly below the threshold of 5. Therefore, collinearity among the predictor constructs is not a critical issue in the structural model. We therefore examined the results of the report. Further assessment of the goodness of fit and hypotheses testing were done to ascertain the significance of the relationships as shown in Table 6.

3.4.3 Importance-Performance Map Analysis (IPMA)

The IPMA was computed to determine the relative importance of constructs in the PLS path analysis model. In this analysis, importance reflects the absolute total effect on the final endogenous variable in the path analysis diagram while performance reflects the size of latent variable scores. This analysis is particularly important in prioritising managerial actions. It is critical for managerial focus to be directed at improving the performance of those constructs that exhibit a large importance regarding their explanation of a certain target construct but, at the same time, have a relatively low performance.

In this case, a construct is more important if it has a higher absolute total effect on use behaviour (UB) as measured on the Y-axis. Here, SE (0.574) has somewhat greater absolute importance than any other constructs outside BI (0.664) (see Figure 4 and Table 7). Furthermore, a construct has greater performance if it has higher mean latent variable score, reflecting stronger measurement paths as measured on the X-axis. Here, PR (69.406) displays greater performance than any other constructs (see Figure 4 and Table 7).

4. DISCUSSION

The key determinants of mobile applications adoption and use in SCI using the modified UTAUT2 model were examined. More emphasis was placed on the cognitive psychological perspective of behavioural intention and use behaviour. Adoption and use of mobile applications were considered planned behaviour. A path analysis model developed in the previous study (Maune, 2021) was tested using PLS-SEM algorithm in SmartPLS software to ascertain critical paths and relationships. The results of the study are tabulated in Table 6. Of note, however, was the omission of latent variables FC and TT despite previous research findings which pointed out their significant effect on BI and UB (Venkatesh et al., 2003; Venkatesh et al., 2012; Groß, 2015). These latent variables were omitted because of high-cross loadings or low factor loadings (Gefen and Straub, 2005). The paths were, however, not supported by the data. In light of this, it is important for future studies to validate this using a bigger sample size. Futhermore, path HT->UB and FC->UB were removed despite the findings by Limayem et al. (2007), Venkatesh et al. (2012) and Venkatesh et al. (2003), respectively who found otherwise. These paths were, however, not supported by the data. The following latent variables show an insignificant relationship with BI as reflected by their p-values and t statistics (EE, HM, PV, SN, and PR). This was despite previous research pointing otherwise (see Appendix 2 in Maune, 2021) (Venkatesh et al., 2003; Venkatesh et al., 2012, Abrahão

et al., 2016; Roy, 2017; Shneor and Munim, 2019). These findings confirm prior research findings (Liu and Tai, 2016; Barua et al., 2018; Chao, 2019; Tarhini et al., 2019; Khurana and Jain, 2019; Gharaibeh et al., 2020). Significant paths were identified and these included the following constructs, PE, SI, HT, SE, and BI. These had significant p-values and t-statistics. Consequently, the results were in line with various studies as shown in Appendix 2 by Maune (2021) that found significant paths/relationships between the variables.

The structural model was assessed for goodness of fit using R^2, Q^2, and significance of paths, with the results shown in Table 6. The findings demonstrated predictive relevance of the constructs under study (Falk and Miller, 1992; Briones-Penalver et al., 2018).

Perhaps the most important finding for SCI practitioners and analysts relates to the IPMA that identifies areas where managerial action is likely to bring the greatest improvement of a selected target construct in the PLS path analysis model. In this study SE proves to be critical for managerial action because of its highest total effect (0.574) (see Table 7 and Figure 4). In terms of raising performance, it would be better for management to focus their efforts on SE, in the knowledge that it has a higher importance and its improvements is likely to lead to larger improvements in explaining UB. All else the same, a one unit rise in the performance of SE would bring about a 0.574 increase in the performance of UB (see Table 7 and Figure 4).

Table 7 Importance-Performance Analysis.

Construct	Performance	Total effect
BI	52.083	0.664
EE	46.889	-0.139
HM	49.791	-0.164
HT	64.410	0.334
PE	58.950	0.481
PR	69.406	0.162
PV	42.448	0.115
SE	34.432	0.574
SI	50.923	-0.242
SN	44.228	-0.007
UB	46.303	-

4.1 Implications for research

This study addresses the call of the previous study (Maune, 2021) that emphasised the need to empirically examine and validate the proposed path analysis model/framework. This path analysis model was developed from literature as an extension of the UTAUT2 (see Figure 2). This path analysis model and its replication is critical for CI analysts and practitioners given the amount of data that is kept and passes through mobile applications. This data will go a long way in mapping sustainable competitive corporate strategies. Results from this study have implications for further future research.

Despite the popularity of the UTAUT2 in examining and testing relationships of constructs in the adoption and use of technology, this study followed a different approach by extending the UTAUT2 framework. This was done by adding four other constructs borrowed from other theories (Maune, 2021). The proposed framework was examined empirically to determine key antecedents to behavioural intention and use behaviour of mobile applications in CI. Through this approach, the study adhered to the cognitive psychological perspective of human behaviour in decision making. Building on this, the findings show insignificant paths for EE, HM, PV, SN, and PR while PE, SI, HT, and SE had significant paths in relation to BI and UB.

This study is the first to address the relationship between the modified UTAUT2, behaviour intention and use behaviour of mobile applications in SC,I empirically. This gap in knowledge was uncovered in the previous article (Maune, 2021) that used literature review to develop a conceptual framework of behaviour intention and use behaviour of mobile applications in SCI. An extended framework was developed to identify key antecedents to behavioural intention and use behaviour of mobile applications in SCI. Perspective antecedents in behavioural intention were given much attention in this study. The study validated these key antecedents to behavioural intention through PLS-SEM algorithm. Moreover, this study combined the UTAUT2 constructs with other four (perceived risk, subjective norm, self-efficacy, and trust) to examine their link with behaviour intention and use behaviour in SCI. Results from this study demonstrated that FC and TT were not supported and that the other findings were not far-off from previous studies as shown in Appendix 2 in Maune (2021). This study complements prior research that investigated relationships between UTAUT2, BI, and UB in various fields.

Furthermore, building on the UTAUT2, this study hypothesises that performance

expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, habit, subjective norm, self-efficacy, trust, and perceived risk were determinants of behaviour intention and use behaviour in SCI. However, facilitating conditions and trust were not supported by the path analysis model. These findings confirm prior research (see Appendix 2 by Maune, 2021) and support the idea that use behaviour is a planned behaviour (Shneor and Munim, 2019). Moreover, findings are in agreement with the contention that EE, HM, PV, SN, and PR have insignificant influence on BI and UB (Liu and Tai, 2016; Barua et al., 2018; Chao, 2019; Tarhini et al., 2019; Khurana and Jain, 2019; Gharaibeh et al., 2020).

4.2 Implications for practice

The model explains and predicts PE, SI, HT, SE and BI, yet, performs poorly in explaining and predicting EE, HM, PV, SN, and PR. Hence, in deriving managerial implications, one is able to derive recommendations to drive BI and UB. The model has some key implications that are valid for SCI.

Perhaps, the most important finding for SCI practitioners and analysts relates to the fact that the path analysis model did not support FC and TT. Furthermore, research has shown how important is the IPMA to managerial decision making. The IPMA helps management determine important constructs in the PLS model. In this study the IPMA clearly shows important determinants critical in the adoption and use of mobile applications in SCI. It is particularly important in prioritising managerial actions. IPMA is helpful for managerial actions to be focused at improving the performance of those constructs that exhibit a large importance regarding their explanation of a certain target construct. In this case, constructs with a relatively higher importance but a relatively low performance are particularly interesting for improvements and must be the focus of management.

In fact, investing into the performance improvement of a construct that has a very small importance for the target construct would not be logical, since it would have little impact in changing (improving) the target construct. In this study, SE is particularly important for explaining the target construct, UB. In a ceteris paribus situation, a one-unit increase in the performance of SE increases the performance of UB by the value of the total effect, which is 0.574. At the same time, the performance of SE is relatively low, so there is substantial room for improvement. Consequently, in the PLS path model example, construct SE is the most relevant construct for managerial actions.

4.3 Limitations

This article examined the key determinants of mobile applications` adoption and use in SCI using an extended UTAUT2 model. Data collection and COVID-19 restrictions limited the scope and findings of this study. The impact of COVID-19 left the researcher using online questionnaires which proved to be a challenge due to the cost of using internet and stress of being locked at home. Initially, the researcher had targeted 150 respondents but due to a number of reasons such as the one mentioned above, 98 responses were received. After the data cleaning process, only 96 were found suitable for use for the purpose of this study. Participatory methods may be planned, to include various groups in the study. A bigger sample would be useful to validate findings.

A longitudinal study would also be useful in future studies that measure relationships between variables. In addition, future studies may extend the empirical analyses by considering advanced PLS-SEM techniques such as the FIMIXPLS, PLS multigroup, and PLS-POS methods to uncover unobserved heterogeneity and generate further differentiated findings and conclusions.

Researchers are encouraged to consider a lot of research ethics to overcome challenges associated with the Covid-19 pandemic. Despite all this, the researcher had to forge ahead with what works, because truth is a normative concept – truth is what works.

5. CONCLUSION

Finally, researchers are encouraged to test the relationships proposed in this study in other fields as well. Consequently, such an attempt would be of great significance from a theoretical perspective. Findings would extend academics` understanding of the key determinants of mobile applications adoption and use in SCI. The study placed more emphasis on the cognitive psychological perspective of behavioural intention and use behaviour. Furthermore, the study considered the adoption and use of mobile applications a planned behaviour.

To examine and validate the path analysis model developed by Maune (2021), the study followed a deductive approach with primary data collected through an online survey. The study applied the PLS-SEM algorithm to analyse relationships between latent and observed variables. Respondents were drawn from CI practitioners and analysts across the board. One hundred and fifty online questionnaires were sent via email and WhatsApp platforms. Completed questionnaires were returned automatically through the Google forms platform to the author by 98 respondents and after data cleaning process 96 responses were retained for analysis.

The study adopted a reflective measurement model. The study satisfied the validity and reliability tests such as Cronbach`s alpha, composite reliability, Average Variance Extracted, Fornell-Larcker criterion, and Heterotrait-Monotrait ratio. Once the construct measures were confirmed reliable and valid, the results of the structural model were then evaluated. The structural model was assessed for goodness of fit using R^2, Q^2, and significance of paths with the results shown in Table 6. The findings demonstrated predictive relevance of the constructs understudy (Falk and Miller, 1992; Briones-Penalver et al., 2018). Of importance, however, was the omission of FC and TT from the path analysis model because the two paths were not supported by the model. This was against prior research findings.

Perhaps the most important finding for SCI practitioners and analysts relates to the IPMA that identifies areas where managerial action is likely to bring the greatest improvement of a selected target construct in the PLS path analysis model. In this study SE proves to be critical for managerial action because of its highest total effect (0.574) (see Table 7 and Figure 4). The IPMA was run to determine the relative importance of constructs in the PLS model. The authors recommend management to prioritize the results of IPMA.

REFERENCES

Abrahão, R. S., Moriguchi, S. N. and Andrade, D. F. *(*2016). "Intention of adoption of mobile payment: An analysis in the light of the Unified Theory of Acceptance and Use of Technology (UTAUT)," *RAI Revista de Administração e Inovação,*Vol. 13, pp. 221–230.

Ajzen, I. (1991). "The theory of planned behavior," *Organisational Behavior and Human Decision Process,* Vol. 50(2), pp. 179–211. https://doi.org/10.1080/08870446.2011.613995.

Ajzen, I. (2002). "Residual Effects of Past on Later Behavior: Habituation and Reasoned Action Perspectives," *Personality & Social Psychology Review,* Vol. 6(2), pp. 107–122.

Ajzen, I. (2012). The theory of planned behaviour. In P. A.M. Lange, E. T. Higgins and A. W. Kruglanski (Eds.), *Handbook of theories of social psychology* (Vol. 1, pp. 438–459). London, UK: Sage.

Ajzen, I. and Fishbein, M. (1980). *Understanding attitudes and predicting social behaviour*, Englewood-Cliffs, NJ: Prentice-Hall.

Ajzen, I. and Fishbein, M. (2005). "The Influence of Attitudes on Behavior," in *The Handbook of Attitudes,* D. Albarracín, B. T. Johnson, and M. P. Zanna (eds.), Mahwah, NJ: Erlbaum, pp. 173–221.

Avkiran, N. K. (2018). Rise of the Partial Least Squares Structural Equation Modeling: An Application in Banking. In N. K. Avkiran, C. M. Ringle (Eds.), *Partial Least Squares Structural Equation Modeling* (pp. 1–29). International Series in Operations Research & Management Science 267. https://doi.org/10.1007/978-3-319-71691-6_1.

Bagozzi, R. P. and Yi, Y. (1988). "On the evaluation of structural equation models," *Journal of the Academy of Marketing Science*, Vol. 16(1), pp. 74–94.

Bailey, C. and Austin, M. (2006). "360 Degree Feedback and Developmental Outcomes: The Role of Feedback Characteristics, Self-Efficacy and Importance of Feedback Dimensions to Focal Managers' Current Role," *International Journal of Selection and Assessment,* Vol.14, pp. 51–66.

Bandura, A. (1986). *Social foundations of thought and action*, Englewood Cliffs, NJ Prentice-Hall.

Bandura, A. (1997). *Self-efficacy: The exercise of control,* New York: Freeman.

Bandura, A. and Locke, E. A. (2003). "Negative self-efficacy and goal effects revisited," *Journal of Applied Psychology,* Vol. 88, pp. 87–99.

Barua, Z., Alam, M. Z., and Hu, W. (2018). "Using the UTAUT Model to Determine Factors Affecting Acceptance and Use of Mobile Health (mHealth) Services in

Bangladesh," *Journal of Studies in Social Sciences,* Vol. 17(2), pp. 137–172.

Briones-Penalver, A. J., Bernal-Conesa, J. A., and Nieves-Nieto, C. (2018). "Analysis of corporate social responsibility in Spanish agribusiness and its influence on innovation and performance," *Corporate Social Responsibility and Environmental Management,* Vol. 25(2), pp. 182–193.

Broadhead-Fearn, D. and White, K. M. (2006). "The role of self-efficacy in predicting rule-following behaviors in shelters for homeless youth: a test of the theory of planned behavior," *The Journal of Social Psychology,* Vol. 146(3), pp. 307–325.

Brown, S. A. and Venkatesh, V. (2005). "Model of Adoption of Technology in the Household: A Baseline Model Test and Extension Incorporating Household Life Cycle," *MIS Quarterly,* Vol. 29(4), pp. 399–426.

Chan, K. Y., Gong, M., Xu, Y., and Thong, J. Y. L. (2008, July 3–7). "Examining User Acceptance of SMS: An Empirical Study in China and Hong Kong." In *Proceedings of 12th Pacific Asia Conference on Information System*, Suzhou, China.

Chao, C. M. (2019). "Factors Determining the Behavioral Intention to Use Mobile Learning: An Application and Extension of the UTAUT Model," *Front. Psychol.* 10:1652. Doi:10.3389/fpsyg.2019.01652.

Chatzisarantis, N. L. D. and Biddle, S. J. H. (1998). "Functional significance of psychological variables that are included in the Theory of Planned Behaviour: A Self-Determination Theory approach to the study of attitudes, subjective norms, perceptions of control and intentions," *European Journal of Social Psychology,* Vol. 28, pp. 303–322.

Childers, T. L., Carr, C. L., Peck, J., and Carson, S. (2001). "Hedonic and Utilitarian Motivations for Online Retail Shopping Behavior," *Journal of Retailing,* Vol. 7(4), pp. 511–535.

Dodds, W. B., Monroe, K. B., and Grewal, D. (1991). "Effects of Price, Brand, and Store Information on Buyers," *Journal of Marketing Research,* Vol. 28(3), pp. 307–319.

East, R. (1993). "Investment decisions and the theory of planned behaviour," *Journal of Economic Psychology,* Vol. 14, pp. 337–375.

Falk, R. F. and Miller, N. B. (1992). *A primer for soft modeling.* University of Akron Press.

Fishbein, M. and Ajzen, I. (1975). *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research,* Addison-Wesley, Reading, MA.

Fornell, C. G., and Larcker, D. F. (1981). "Structural equation models with unobservable variables and measurement error: Algebra and statistics," *Journal of Marketing Research*, Vol.18 (3), pp. 328–388.

Gefen, D. and Straub, D. (2005). "A practical guide to factorial validity using PLS-Graph: Tutorial and annotated example," *Communications of the Association for Information Systems,* Vol. 16(1), pp. 91–109.

Gharaibeh, N., Gharaibeh, M. K., Gharaibeh, O. and Bdour, W. (2020). "Exploring intention to adopt mobile commerce: Integrating UTAUT2 with social media," *International Journal of Scientific and Technology Research*, Vol. 9 (3), pp. 3826–3833.

Groß, M. (2015). "Exploring the acceptance of technology for mobile shopping: An empirical investigation among Smartphone users," *The International Review of Retail, Distribution and Consumer Research*, Vol. 25(3), pp. 215–235.

Ha, C. L. (1998). "The theory of reasoned action applied to brand loyalty," *The Journal of Product and Brand Management,* Vol. 7(1), pp. 51–61.

Hair, J. F., Hult, G. T. M., Ringle, C. M., and Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (2nd Ed.). Los Angeles: Sage.

Henseler, J., Ringle, C. M., and Sarstedt, M. (2015). "A new criterion for assessing discriminant validity in variance-based structural equation modeling," *Journal of the Academy of Marketing Science,* Vol. 43, pp. 115–135.

Khurana, S. and Jain, D. (2019). "Applying and Extending UTAUT2 Model of Adoption of New Technology in the Context of M-Shopping Fashion Apps," *International Journal of Innovative Technology and Exploring Engineering (IJITEE)*, Vol. 8(9S), pp. 752–759. *DOI: 10.35940/ijitee.I1122.0789S19.*

Kim, S. S. and Malhotra, N. K. (2005). "A Longitudinal Model of Continued IS Use: An Integrative View of Four Mechanisms Underlying Post-Adoption Phenomena," *Management Science,* Vol. 51(5), pp. 741–755.

Kim, S. S., Malhotra, N. K., and Narasimhan, S. (2005). "Two Competing Perspectives on Automatic Use: A Theoretical and Empirical Comparison," *Information Systems Research,* Vol. 16(4), pp. 418–432.

Limayem, M., Hirt, S. G., and Cheung, C. M. K. (2007). "How Habit Limits the Predictive Power of Intentions: The Case of IS

Continuance," *MIS Quarterly,* Vol. 31(4), pp. 705–737.

Liu, G-S. and Tai, P. T. (2016). "A Study of Factors Affecting the Intention to Use Mobile Payment Services in Vietnam," *Economics World,* Vol. 4(6), pp. 249–273. Doi: 10.17265/2328-7144/2016.06.001.

Marcoulides, G. A. and Saunders, C. (2006). "Editor's Comments – PLS: A Silver Bullet?" *MIS Quarterly*, Vol. 30(2), pp. iii–ix.

Maune, A. (2021). "Intention to use mobile applications in competitive intelligence: An extended conceptual framework," *Journal of Intelligence Studies in Business*, Vol. 11(2), pp. 6–29.

Maune, A., Matanda, E. and Mundonde, J. (2021). "Financial Inclusion as an Intentional Behaviour in Zimbabwe," *Acta Universitatis Danubius. OEconomica*, Vol. 17(4), pp. 177–211.

O'connor, R. C. and Armitage, C. J. (2003). "Theory of Planned Behaviour and Parasuicide: An Exploratory Study," *Current Psychology: Developmental, Learning, Personality, Social,* Vol. 22(3), pp. 196–205.

Ouellette, J. A. and Wood, W. (1998). "Habit and Intention in Everyday Life: The Multiple Processes by Which Past Behavior Predicts Future Behavior," *Psychological Bulletin,* Vol. 124(1), pp. 54–74.

Roy, S. (2017). "App adoption and switching behavior: applying the extended tam in smartphone app usage," *JISTEM–Journal of Information Systems and Technology Management,* Vol. 14(2), pp. 239–261. DOI: 10.4301/S1807-17752017000200006.

Shneor, R. and Munimb, Z. H. (2019). "Reward crowdfunding contribution as planned behaviour: An extended framework," *Journal of Business Research*, Vol. 103, pp. 56–70.

Solberg K. S. (2019). "The argument that 'there is nothing new in the competitive intelligence field,'" *Journal of Intelligence Studies in Business,* Vol. 9(3), p. 4–6.

Tarhini, A., Alalwan, A. A., Shammout, A. B., Al-Badi, A. (2019). "An analysis of the factors affecting mobile commerce adoption in developing countries: Towards an integrated model," *Review of International Business and Strategy,* Vol. 29(3), pp. 157–179.

Tenenhaus, M., Vinzi, V. E., Chatelin, Y.-M., and Lauro, C. (2005). "PLS path modeling," *Computational Statistics and Data Analysis,* Vol. 48, pp. 159–205.

Thong J. Y. L., Hong, S. J., and Tam, K. Y. (2006). "The Effects of Post-Adoption Beliefs on the Expectation–Confirmation Model for Information Technology Continuance," *International Journal of Human-Computer Studies,* Vol. 64(9), pp. 799–810.

van der Heijden, H. (2004). "User Acceptance of Hedonic Information Systems," *MIS Quarterly,* Vol. 28(4), pp. 695–704.

Venkatesh, V., Morris, M. G., Davis, G. B., and Davis, F. D. (2003). "User Acceptance of Information Technology: Toward a Unified View," *MIS Quarterly,* Vol. 27(3), pp. 425–478.

Venkatesh, V., Thong, J., and Xu, X. (2012). "Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology," *MIS Quarterly*, Vol. 36(1), pp. 157–178.

Yadav, R., Chauhan, V. and Pathak, G. S. (2015). "Intention to adopt internet banking in an emerging economy: a perspective of Indian youth," *International Journal of Bank Marketing,* Vol. 33(4), pp. 530–544.

Zeithaml, V. A. (1988). "Consumer Perceptions of Price, Quality, and Value: A Means–End Model and Synthesis of Evidence," *Journal of Marketing,* Vol. 52(3), pp. 2–22.

Zhao, H., Seibert, S. E. and Hills, G. E. (2005). "The Mediating Role of Self-Efficacy in the Development of Entrepreneurial Intentions," *Journal of Applied Psychology,* Vol. 90, pp. 1265–1272.

Zimmerman, B. J., Bandura, A. and Martinez-Pons, M. (1992). "Self-motivation for academic attainment: The role of self-efficacy beliefs and personal goal setting," *American Educational Research Journal,* Vol. 29, pp. 663–676.

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Networking capabilities and digital adoption of business agility with Business model innovation as a mediating variable

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ABSTRACT In business, agility is a method that places projects on a smaller scale and engages team members through constant collaboration and continuous iteration. Thus, it needs to find the factors affecting business agility. This study aims to determine the influence of networking capabilities and digital adoption on business agility with the variable business model innovation as a mediation variable using quantitative method. The results show that all variables have significant and positive effect of business agility. It is concluded that networking capabilities, digital adoption, and business model innovation can escalate business agility

KEYWORDS: Business agility, networking capabilities, digital adoption, business model innovation

1. INTRODUCTION

In the business world, agility is a method that places projects on a smaller scale and engages team members through constant collaboration and continuous iteration. This method offers an iterative and gradual approach, so it does not work sequentially and creates a product at the end of the project (Xie et al., 2022). Observing the current work environment, the need to have resources becomes very important, especially for workers in a company. The development of technology in this time has influenced the dynamics of business and small businesses to be so volatile. Therefore, it is not surprising that the flexibility of workers and leaders in facing change is an important component in maintaining the sustainability of a company. This also has an impact on the Micro, Small, and Medium Enterprises(MSME)/Usaha Mikro Kecil dan Menengah (UMKM) sector. In order to maintain productivity and maintain their income, UMKMs are competing to take advantage of digital platforms. Coordinating Minister for Economic Affairs Airlangga Hartarto noted

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that there are around 301,115 Micro, Small, and Medium Enterprises that switch digital platforms (Cepeda & Arias-Pérez, 2019).

The agile process certainly reiterates the importance of the role of agility, especially during this pandemic. Agility is an important aspect that encourages individuals to be able to quickly adjust to changes and existing situations. Unfortunately, in Indonesia, agility is actually a concept that has not been noticed for a long time. In fact, looking at the description of competencies that are a component of agility will be useful for the HR team in managing employee potential, especially in the current fluctuating business era.

In addition to business agility, business models are useful in modern business environments because they allow organizations to understand the value of future organizations and how companies in general operate (Orvos, 2019). The definition of the entire business model can be explained, for example, capturing the functioning of the company way and creating value and providing value to customers a,nd converting customer responses into profits (Bouwman et al., 2018). The application of business model innovations is expected to be able to be better useful by collecting creative ideas to be processed which then the ideas become informative innovations that are able to be implemented on innovation projects in a way effective and efficient.

One of the factors that affect business agility is the company's network capability or ability to develop and establish cooperation with other companies to benefit from the cooperation. The advantage obtained from having network capability is the ease of obtaining information related to resources, markets and the latest technology that can be used to support company performance (Gulati, R., N. Nohria, 2000; H. Wang & Fang, 2021). This capability is important for the company's long-term success and viability (Parida et al., 2016, 2017). Previous research conducted by (Majid et al., 2019; Z. Wang & Kim, 2017) resulted in the conclusion that network capability effectively affects the level of business agility.

In addition to network capablity, the next factor that affects business agility is digital adoption. It is undeniable that by applying technology in every field of business, it can improve the company's performance. So many conveniences can be achieved in various aspects of the business. Digital adoption can meet the information needs of the business world quickly, precisely, accurately and relevantly. In addition, Digital adoption also has an important role for companies in their competitive advantage strategy. Digital adoption will affect almost all aspects of 2 business management and can provide added value if managed properly and designed into an effective information system. (Karvonen et al., 2018) states that the behavioral aspect in the adoption of information technology is an important thing to pay attention to because the interaction between users and computers is the result of the influence of perceptions, attitudes, affections as aspects of behavior that exist in individuals as users.

Therefore, based on the explanations presented above, researchers are interested in conducting research on how networking capabilities and digital adoption affect business agility with the Business model innovation as a mediation variable. The latest in this study is the addition of business agility variables and network cpabilities based on suggestions from previous research conducted by nasution (2004), so that it becomes four variables networking capabilities, digital adoption, business agility, Business model innovation. The purpose of this study is to determine the influence of Networking capabilities and digital adoption on business agility with the variable Business model innovation as a mediation variable.

2. LITERATURE REVIEW

2.1 Network capability

Network capability is a dynamic capability that creates dependence inside and outside the organization (Battistella et al., 2017). Network capabilities allow companies to gain access to different resources, identify opportunities and respond quickly to ever-changing marketing needs (Solano et al., 2018). This variable is a company's ability to develop and utilize interactions between organizations to gain access to various recources owned by other parties (Walter et al. in Chabachib, 2020). According to Zacca et al. (2015) network capability is the company's ability to create, improve, and use internal and external organizational relationships.

In network capability there are four aspects, which are internal communication, coordination, relationship skills, partner knowledge. Coordinationconsists of the integration and synchronization of resources to ensure their effective utilization to achieve organization's

goals (Bengesi & Le Roux, 2014). The main essence of coordination is a situation in which various important organizational resources and activities are shared outside the boundaries of the organization, which connect different individuals and independent organizations together, thereby developing a network of mutually beneficial interactions (Walter et al. dalam Majid et al., 2019).

2.2 Digital Adoption

(Lee et al., 2021), The adoption rate is the relative speed at which innovation is adopted by members of the social system. It is generally measured as the number of individuals who adopt a new idea in a certain period, such as each year. So the adoption rate is a numerical indicator of the steepness of the adoption curve for an innovation. The perceived attributes of an innovation are one of the important explanations of the adoption rate of an innovation

According to (Ghobakhloo & Ching, 2019), the adoption of innovation is a process of social change with the presence of new discoveries that are communicated to other parties, then adopted by society or social systems. Innovation is an idea that is considered new by a person, it can be a new technology, a new way of organization, a new way of marketing agricultural products and so on. The adoption process is a process that occurs from the first time a person hears a new 16 xxx thing until the person adopts (accepts, applies, uses) the new thing.

(Parra-Sánchez et al., 2021) mentions that the nature and character of technology develops depending on one's perception of technology. Technology can be viewed as an object, as a process, as a science (as a knowledge), and as control (as a volition) (Patil et al., 2022) Technology has three domains, namely: design technology (design), production Technology (Manufacture), And Marketing Technology (Pradhan Et Al., 2020).

2.3 Business Agility

Nowaday's business is moving very fast, innovation and disruption are emerging every day. If organizations do not implement agile methods, then they can lose their advantage and be no longer relevant. Agility itself, is the ability to think and understand the situation quickly. In the business world, agility is a method that places projects on a smaller scale and engages team members through constant collaboration and continuous iteration. This method offers a iterative and gradual approach, so it does not work sequentially and creates a product at the end of the project.

The concept of agility itself is originally a concept known in the field of information systems studies (Saputra et al., 2021). Meanwhile, in strategic management, Drucker conceived agility to explain the importance of increasing organizational flexibility and responsibility (Liao et al., 2019). The further research involved hundreds of companies and the results were published by (Liu & Yang, 2019) Since then, studies on organizational agility in strategic management have been widely carried out such as (Muna et al., 2022), (Holbeche, 2019). In the study of entrepreneurship, organizational agility itself is a form of entrepreneurial action (Attar & Abdul-Kareem, 2020).

2.4 Business model innovation

According to (Geissdoerfer et al., 2018) one of the five key success factors discussed throughout the book "Untapped: Creating Value in Underserved Markets" is adapt business model to community realities. Thus, business model innovation is one of the important keys to success. According to (Colovic, 2022), broadly speaking, business model innovation is planning and designing new ways of doing business through changes, improvements, and improvements to existing business processes, both internally and in collaboration with externals so as to create new work processes that have never been done before to increase the added value of stakeholders.

So in this study the author concludes that business model innovation is a unique, complementary way of combining increases efficiency and effectiveness where it is able to create, provide and capture value.

3. RESEARCH METHOD

Research Design

This research is included in descriptive quantitative research (Yannis & Nikolaos, 2018) states that, say that, research methods are basically scientific traits to obtain data with a specific purpose and usefulness. Methods used in the quantitative approach. According to (Quick & Hall, 2015) said that descriptive research is research that uses observations, interviews or questionnaires regarding the current state of affairs and also the subject we are researching. Through questionnaires and so

on researcher collect data to test hypothesis or answer a question. Through this descriptive research, the researcher will explain what is actually happening about the current situation that is being studied.

Research Subject

This research was conducted at culinary SMEs in Surabaya Bandung Semarang Jakarta Yogyakarta Bali. The sampling technique in this study was random sampling so that in this study a research sample of 100 Culinary SMEs in Surabaya Bandung Semarang Jakarta Yogyakarta Bali was obtained.

Data Collection

Data collection technique done is through questionnaires that are spread using google form. The google form can ease the collection of survey research.

Data Analysis

The data analysis technique in this study used Partial Least Square (PLS). PLS is a structural equation model modeling (SEM) with an approach based on variance or component-based structural equation modeling. According to (Sohaib et al., 2020), the purpose of PLS-SEM is to develop a theory or build a theory (predictive orientation). PLS is used to explain the presence or absence of relationships between latent variables (prediction). PLS is a powerful analysis method because it does not assume current data with a certain scale measurement, the number of samples is small.

4. RESULT

a. Outer Model Analysis

1) Validity Test

In order to measure the validity or validity of a questionnaire, the researcher uses The Validity Test. In this study, the validity testing is done using convergent validity and AVE. The instrument is declared valid if the AVE value > 0.05 and the outer loading value (> 0.6).

2) Uji Reliabilitas

In this study, researchers used 2 types of reliability tests, namely the Cronbach Alpha test and the Composite Reliability Test. Cronbach Alpha measures the lowest value (lowerbound) reliability. The data is stated to be good if the data has a Cronbach alpha value and a composite reliability score of >0.7. Based on the calculations carried out, it was found that all instrument items met the requirements of validity and reliability with scores that exceeded the criteria..

3) R Square

Coefficient determination (R-Squareis used in the measurement of how many endogenous variables are influenced by other variables. Based on data analysis carried out through the use of the smartPLS program, the R-Aquare value was obtained as stated in the following table in appendix. The score in the table explains that the business agility variable is influenced by Networking capabilities, digital adoption, and business model innovation by 49.7% while the rest is influenced by other variables that were not studied in this study. The table explains that the business model innovation variable is influenced by Networking capabilities and digital adoption, by 68.3% while the rest is influenced by other variables that were not studied in this study.

4) Hypothesis Result

This table is avaluable in appendix. The presentation of the hypothesis results are defined in the following.

a) Effect of Business Model Innovation (Z) on Business Agility (Y)

The results of testing the business model innovation hypothesis on business agility obtained a score of (p = 0.039) with a p value of 0.773 (p1.96) showing that there was no significant positive influence between the business model innovation variable on business agililty. This rejects the research conducted by (Cahanar & Hamsal, 2021).

b) Effect of Networking capabilities (X1) on Business Agility (Y)

The results of testing the Networking capabilities hypothesis on business agility obtained a score (p = 0.436) with p values of 0.001 (p1.96) indicating that there was a significant positive influence between variable Networking capabilities on business agility. The better the networking capabilities owned by SMEs, the better the business agility. Some of the findings that are in line with the results of this study include the findings of Moghli, & Muala (2012) that entrepreneurial networks have a significant influence on business success or performance. Then (Akintimehin et al., 2019) the findings are that partially network capability has a significant effect on business performance in fabric centers (Asad, Sharif, & Alekam, 2016) the findings explain that there is a positive influence of the three dimensions of network capability

(internal communication, partner knowledge and relational skills) on performance in small and medium-scale companies.

c) Effect of Networking capabilities (X1) on Business Model Innovation (Z)
The results of testing the Networking capabilities hypothesis on business model innovation obtained a score (p = 0.555) with a p value of 0.000 (p1.96) showing that there was a significant positive influence between the networking capabilities variable on business model innovation. The better the SME's Networking capabilities, the better the SME's business model innovation will be. This is in line with the research conducted by (Mihardjo, Sasmoko, Alamsjah, & Elidjen, 2018).

d) Effect of digital adoption (X2) on Business Agility (Y)
The results of testing the digital adoption hypothesis on business agility obtained a score (p = 0.291) with p values of 0.009 (p1.96) showing that there is a significant positive influence between digital adoption variables on business agility. The better the digital adoption carried out by SMEs, the better the business agility will be. This is in line with the research conducted by (Kosasi, Vedyanto, & Yuliani, 2018).

e) Effect of digital adoption (X2) on Business Model Innovation (Z)
The results of testing the digital adoption hypothesis on business model innovation obtained a score (p = 0.338) with p values of 0.000 (p1.96) showing that there is a significant positive influence between the digital adoption variables on business model innovation. The better the digital adoption owned by SMEs, the better the innovation of SME business models will be. This is in line with the research conducted by (Ghezzi & Cavallo, 2020).

f) Effect of Networking capabilities (X1) on Business Agility (Y) Mediated by Business Model Innovation (Z)
The results of testing the network capablities hypothesis on business agility mediated by business model innovation obtained a score (p = 0.216) with p values of 0.009 (p1.96) showing that there was a significant positive influence between variable network capablities on business agility mediated by business model innovation . The better the network capabilities owned by SMEs, the more it will affect business agility, this is also strengthened by the innovation of business models. This is in line with research conducted by Mulyana and (Robert Zacca, Dayan, & Ahrens, 2015).

g) Effect of digital adoption (X2) on Business Agility (Y) Mediated by Business Model Innovation (Z)
The results of testing the network capablities hypothesis on business agility mediated by business model innovation obtained a score (p = 0.213) with p values of 0.008 (p1.96) showing that there was a significant positive influence between variable network capablities on business agility mediated by business model innovation. The better the digital adoption carried out by SMEs, this can increase business agility, as well as the existence of business model innovation variables to strengthen digital adoption of business agility.

5. DISCUSSION

Business agility is a relatively new paradigm painted as a solution for maintaining competitive advantage during times of uncertainty and turbulence in the business environment. Quickness is about the speed with which the organization can respond to customer requests, market dynamics, and emerging technology options. This includes the time to sense relevant events, the time to interpret what is happening and assess the consequences for the organization, the time to explore options and decide on which actions to take, and the time to implement appropriate responses. Resources are about the capabilities that are available within the organization including people, technology, processes, and knowledge. Resources can be both tangible and intangible and they provide the basis for doing business and for instantiating change. Adaptability is about how well the organization responds to changing demands, threats, or opportunities. This requires the ability to learn as well as flexible processes and products that can be reconfigured without extensive additional costs. Agility is concerned with economies of scope, rather than economies of scale.

Based on the results of this research, although business agility has increased, yet it is unaffected by the business model innovation. Business model innovation / BMI that has advantages to enable companies to be adaptive to market changes. Through a production framework that relies on cooperation with SME partners is one of the keys to being flexible, if the cost structure problem can be overcome, it will make it easier for companies

to change resource allocation and form competitive prices. In addition, such business models form a unique attractive market segment. Thus, it allows the company to provide value added to the customer and will facilitate revenue streams.

In addition, the network capability possessed by entrepreneurs forms the foundation for entrepreneurial success. According to (R. Zacca et al., 2015) network capability is defined as a company's ability to initiate, develop, and utilize internal organizations as well as external inter-organizational relationships. When the network capability is increased, business agility will be able to be increased.

Broadly speaking, the use of digital technology is directed at increasing the company's business agility. According to Sri Mulyani, the ability to create and also adopt digital technology determines how an economy and a country are able to enter the global value chain system that will increase productivity. So that with good digital adoption from SMEs, it will increase their business agility.

Other than that, based on the result of this research, the existence of business model innovation can increase more the variables that affect business agility. The ability to collaborate between SMEs will continue to give birth to innovations. Changes in consumer needs and desires to satisfy themselves will spur companies to innovate continuously in order to create products that are in accordance with consumer desires. So that this can increase the business agility of SMEs.

In fact, this research also shows that business network capability is said by the ability to carry out integrated cooperation between two or more parties that is harmonious, synergistic, systematic, integrated and has the aim of establishing business potential in generating optimal profits. With good cooperation between companies, it will provide business model innovation (Cahanar & Hamsal, 2021). In addition, the diversity of insights from owners/managers in SMEs on technology adoption strategies generates different driving forces and barriers related to adopting, adapting and assimilating internet information technology in organizations. (Bleicher & Stanley, 2016) noted organizational readiness is the main reason technology adopters differ from non-adopters. A critical characteristic of technology adoption is the ability of SME executives to navigate and adapt to an environment that sets the right expectations for the benefits of technology to organizations so it may shape business model innovations.

6. CONCLUSION

Based on research and discussion, it can be concluded that there is no significant positive influence between the variable business model innovation on business agililty, there is a significant positive influence between variable Networking capabilities on business agility, there is a significant positive influence between variable Networking capabilities on business model innovation, there is a significant positive influence between digital adoption variables on business agility, there is a significant positive influence between digital adoption variables on business model innovation, there is a significant positive influence between variable network capablities on business agility mediated by business model innovation, there is a significant positive influence between variable network capablities towards business agility mediated business model innovation. Business agility is influenced by Networking capabilities, digital adoption, and business model innovation by 49.7%, and business model innovation is influenced by Networking capabilities and digital adoption, by 68.3%. The researchers hope that in the next study to replace variables that are not yet in the study so that this research becomes more reliable.

REFERENCES

Akintimehin, O. O., Eniola, A. A., Alabi, O. J., Eluyela, D. F., Okere, W., & Ozordi, E. (2019). Social capital and its effect on business performance in the Nigeria informal sector. Heliyon. https://doi.org/10.1016/j.heliyon.2019.e02024

Asad, M., Sharif, M. N. M., & Alekam, J. M. E. (2016). Moderating effect of entrepreneurial networking on the relationship between access to finance and performance of micro and small enterprises. Paradigms, 10(1), 1.

Attar, M., & Abdul-Kareem, A. (2020). The Role of Agile Leadership in Organisational Agility. In Agile Business Leadership Methods for Industry 4.0. https://doi.org/10.1108/978-1-80043-380-920201011

Battistella, C., De Toni, A. F., De Zan, G., & Pessot, E. (2017). Cultivating business model agility through focused capabilities:

A multiple case study. Journal of Business Research, 73, 65–82. https://doi.org/https://doi.org/10.1016/j.jbusres.2016.12.007

Bengesi, K. M., & Le Roux, I. (2014). The influence of dimensions of networking capability in small and medium enterprise performance. Nternational Journal of Business and Social Science, 2(5), 189–200.

Bleicher, J., & Stanley, H. (2016). Digitization as a catalyst for business model innovation a three-step approach to facilitating economic success. Journal of Business Management.

Bouwman, H., Heikkilä, J., Heikkilä, M., Leopold, C., & Haaker, T. (2018). Achieving agility using business model stress testing. Electronic Markets. https://doi.org/10.1007/s12525-016-0243-0

Cahanar, P., & Hamsal, M. (2021). The Important Role of Corporate Entrepreneurship, Digital Capabilities, and Readiness to Change in Business Performance: Moderated by the Adoption of Business Model Innovations in the Newspaper Industry in Indonesia. ICEBE 2020: Proceedings of the First International Conference of Economics, Business & Entrepreneurship, ICEBE 2020, 1st October 2020, Tangerang, Indonesia, 483. European Alliance for Innovation.

Cepeda, J., & Arias-Pérez, J. (2019). Information technology capabilities and organizational agility: The mediating effects of open innovation capabilities. Multinational Business Review. https://doi.org/10.1108/MBR-11-2017-0088

Chabachib, M. (2020). Buku Monograf: KINERJA UMKM KOTA SEMARANG.

Colovic, A. (2022). Leadership and business model innovation in late internationalizing SMEs. Long Range Planning. https://doi.org/10.1016/j.lrp.2021.102083

Geissdoerfer, M., Vladimirova, D., & Evans, S. (2018). Sustainable business model innovation: A review. Journal of Cleaner Production. https://doi.org/10.1016/j.jclepro.2018.06.240

Ghezzi, A., & Cavallo, A. (2020). Agile Business Model Innovation in Digital Entrepreneurship: Lean Startup Approaches. Journal of Business Research. https://doi.org/10.1016/j.jbusres.2018.06.013

Ghobakhloo, M., & Ching, N. T. (2019). Adoption of digital technologies of smart manufacturing in SMEs. Journal of Industrial Information Integration. https://doi.org/10.1016/j.jii.2019.100107

Gulati, R., N. Nohria, and A. Z. (2000). Strategic Networks. Strategic Management Journal, 21(3), 203–215.

Holbeche, L. (2019). Designing sustainably agile and resilient organizations. Systems Research and Behavioral Science. https://doi.org/10.1002/sres.2624

Karvonen, T., Sharp, H., & Barroca, L. (2018). Enterprise agility: Why is transformation so hard? Lecture Notes in Business Information Processing. https://doi.org/10.1007/978-3-319-91602-6_9

Kosasi, S., Vedyanto, & Yuliani, I. D. A. E. (2018). Improving organizational agility of micro, small, and medium enterprises through digital marketing strategy. Proceedings–2017 2nd International Conferences on Information Technology, Information Systems and Electrical Engineering, ICITISEE 2017. https://doi.org/10.1109/ICITISEE.2017.8285561

Lee, Y. Y., Falahat, M., & Sia, B. K. (2021). Drivers of digital adoption: a multiple case analysis among low and high-tech industries in Malaysia. Asia-Pacific Journal of Business Administration. https://doi.org/10.1108/APJBA-05-2019-0093

Liao, S., Liu, Z., & Ma, C. (2019). Direct and configurational paths of open innovation and organisational agility to business model innovation in SMEs. Technology Analysis and Strategic Management. https://doi.org/10.1080/09537325.2019.1601693

Liu, H. M., & Yang, H. F. (2019). Managing Network Resource and Organizational Capabilities to Create Competitive Advantage for SMEs in a Volatile Environment. Journal of Small Business Management. https://doi.org/10.1111/jsbm.12449

Majid, A., Yasir, M., Yousaf, Z., & Qudratullah, H. (2019). Role of network capability, structural flexibility and management commitment in defining strategic performance in hospitality industry. International Journal of Contemporary Hospitality Management.

Mihardjo, L. W. W., Sasmoko, Alamsjah, F., & Elidjen. (2018). The role of distinctive organisational capability in formulating co-creation strategy and business model innovation. Polish Journal of Management Studies. https://doi.org/10.17512/pjms.2018.18.2.16

Muna, N., Yasa, N. N. K., Ekawati, N. W., Wibawa, I. M. A., Ayu Sriathi, A. A., & Adi, I. N. R. (2022). Market entry agility in

the process of enhancing firm performance: a dynamic capability perspective. International Journal of Data and Network Science. https://doi.org/10.5267/J.IJDNS.2021.9.018

Orvos, J. (2019). Achieving Business Agility. In Achieving Business Agility. https://doi.org/10.1007/978-1-4842-3855-4

Parida, V., Patel, P. C., Wincent, J., & Kohtamäki, M. (2016). Network partner diversity, network capability, and sales growth in small firms. Journal of Business Research, 69(6), 2113–2117.

Parida, V., Pesämaa, O., Wincent, J., & Westerberg, M. (2017). Network capability, innovativeness, and performance: a multidimensional extension for entrepreneurship. Entrepreneurship & Regional Development, 29(1), 94–115.

Parra-Sánchez, D. T., Talero-Sarmiento, L. H., & Guerrero, C. D. (2021). Assessment of ICT policies for digital transformation in Colombia: technology readiness for IoT adoption in SMEs in the trading sector. Digital Policy, Regulation and Governance. https://doi.org/10.1108/DPRG-09-2020-0120

Patil, A. S., Navalgund, N. R., & Mahantshetti, S. (2022). Digital Marketing Adoption by Start-Ups and SMEs. SDMIMD Journal of Management. https://doi.org/10.18311/sdmimd/2022/29677

Pradhan, P., Nigam, D., & Tiwari, C. K. (2020). Partial least square method-structural equation model for assessment of drivers of digital marketing adoption by Indian SMEs. International Journal of Advanced Science and Technology.

Quick, J., & Hall, S. (2015). Part three: The quantitative approach. Journal of Perioperative Practice. https://doi.org/10.1177/175045891502501002

Saputra, N., Sasanti, N., Alamsjah, F., & Sadeli, F. (2021). Strategic role of digital capability on business agility during COVID-19 era. Procedia Computer Science. https://doi.org/10.1016/j.procs.2021.12.147

Sohaib, O., Hussain, W., Asif, M., Ahmad, M., & Mazzara, M. (2020). A PLS-SEM Neural Network Approach for Understanding Cryptocurrency Adoption. IEEE Access. https://doi.org/10.1109/ACCESS.2019.2960083

Solano Acosta, A., Herrero Crespo, Á., & Collado Agudo, J. (2018). Effect of market orientation, network capability and entrepreneurial orientation on international performance of small and medium enterprises (SMEs). International Business Review. https://doi.org/https://doi.org/10.1016/j.ibusrev.2018.04.004

Wang, H., & Fang, C. C. (2021). The influence of corporate networks on competitive advantage: the mediating effect of ambidextrous innovation. Technology Analysis & Strategic Management, 1–15.

Wang, Z., & Kim, H. G. (2017). Can social media marketing improve customer relationship capabilities and firm performance? Dynamic capability perspective. Journal of Interactive Marketing, 39, 15–26.

Xie, X., Han, Y., Anderson, A., & Ribeiro-Navarrete, S. (2022). Digital platforms and SMEs' business model innovation: Exploring the mediating mechanisms of capability reconfiguration. International Journal of Information Management, 65, 102513.

Yannis, P., & Nikolaos, B. (2018). Quantitative and Qualitative Research in Business Technology: Justifying a Suitable Research Methodology. Review of Integrative Business and Economics Research.

Zacca, R., Dayan, M., & Ahrens, T. (2015). Impact of network capability on small business performance. Management Decision, 53(1), 2–23.

Zacca, Robert, Dayan, M., & Ahrens, T. (2015). Impact of network capability on small business performance. Management Decision. https://doi.org/10.1108/MD-11-2013-0587