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Abstract: Innovative behaviour is essential for improving school teachers' performance, yet models of innovative work behaviour in this context remain underexplored. This study investigates how learning orientation culture and self-determination influence teachers' innovative work behaviour, based on the theory of planned behaviour. Mediating factors include attitudes toward innovation, subjective norms for innovation, innovation efficacy, and innovative intention. Surveying 373 private school teachers across Java, Indonesia, covering K-12 education, the study finds that applying the theory of planned behaviour in this context differs from its general use. Background factors enhance innovative work behaviour through intention, mediated by attitudes and norms and directly via innovation efficacy without intention. The findings advance the theory of planned behaviour in education and offer practical recommendations for school management to foster a learning orientation culture and self-determination that support teacher innovation.

Keywords: innovative; teacher; theory of planned behaviour; learning orientation; self-determination.

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1 Introduction

The increasingly tight competition between organisations encourages human resource management to develop stronger innovation within organisations (Koster and Benda, 2020). Likewise, competition in educational institutions requires schools to develop innovation management (Parnawi et al., 2021). Innovation in school organisations requires teachers' innovative work behaviour which is proven to influence performance (Santoso et al., 2019; Ferdinand and Lindawati, 2021; Faulks et al., 2021). Therefore, they need to significantly improve their innovative work behaviour to strengthen their performance. Some previous studies on innovative work behaviour models are shown in Appendix 1.

Based state-of-the-arts about innovative work behaviour model on Appendix 1, it was found that 67% of the studies were done in the industrial sector, and only 33% were in the education sector, especially those involving school teachers as the subject. School teachers' innovative work behaviour model in the Netherlands is influenced by basic psychological need satisfaction, intrinsic motivation and occupational self-efficacy (Klaeijsen et al., 2018). Job autonomy and commitment are also incorporated into the theoretical framework that influences school teachers' innovative work behaviour in Malaysia (Baharuddin et al., 2019). Teamwork, principal support and humour have also been proven effective in increasing school teachers' innovative work behaviour in Malaysia (Johari et al., 2021). It is also influenced by a supportive work environment with informal learning as the mediator in Vietnam (Phuong et al., 2021). Self-efficacy, irrational beliefs and burnout influence innovative work behaviour in school teachers in Greece (Gkontelos et al., 2023).

The innovative work behaviour model in school teachers has been proven to be influenced more by proximal or individual factors than by distal or environmental factors. Proximal factors like proactive personality, affective states, creative self-efficacy, basic psychological need satisfaction, intrinsic motivation, occupational self-efficacy, job autonomy, job commitment, humour, informal learning, irrational beliefs and burnout are studied as factors affecting innovative work behaviour (Li et al., 2016; Klaeijsen et al., 2018; Baharuddin et al., 2019; Johari et al., 2021; Phuong et al., 2021; Gkontelos et al., 2023). On the other hand, the distal factors are rarely studied in this model. Some distal factors in the innovative work behaviour model are teamwork, principal support and a supportive work environment (Johari et al., 2021; Phuong et al., 2021).

Proximal or individual factors directly correlate with innovative work behaviour rather than distal or environmental factors. The influence of distal factors on innovative work behaviour is usually indirect with the mediation of proximal factors. It is in line

with the theory of planned behaviour that describes that behaviour is preceded by an intention directly influenced by proximal or individual factors comprising attitude towards behaviour, subjective norm and perceived behavioural control based on each belief and influenced indirectly by background factors or antecedents. The background factors can be distal or environmental factors or other factors that can be antecedent like dispositions, demographics and information (Ajzen et al., 2007; Thurlings et al., 2015).

Based on their literature review, Thurlings et al. (2015) suggested a study of innovative work behaviour in school teachers using the theory of planned behaviour model because it can clarify the role of antecedents and distal factors that mediate the process before generating intentions and forming innovative behaviour. Currently, there is only one study of innovative work behaviour using the theory of planned behaviour model, namely a study conducted on practitioners in 152 technology-based enterprises in China by examining government support as a background factor or antecedent (Zhang et al., 2021). There has not been any study on innovative work behaviour in school teachers using the theory of planned behaviour model.

School teachers' characteristics are different from those of industrial practitioners. Innovative work behaviour in school teachers, especially those working in private schools, is not directly influenced by government support. Private school management in Indonesia is not funded by the government (Marzuki, 2001). The '*Merdeka Belajar*' curriculum (Free Learning Curriculum) initiated by the government is also left to each school to develop flexibly (Hasanah et al., 202). Therefore, it is necessary to study the background factors or other antecedents suitable for forming innovative work behaviour in school teachers.

This study assumed that innovative work behaviour in school teachers is influenced more by learning orientation culture and self-determination as its background factors or antecedents. Based on the theory of planned behaviour model, learning orientation culture as a school culture is information background (experience and knowledge), while self-determination constitutes a disposition background (global attitude) in the theory of planned behaviour model (Ajzen et al., 2007). The two backgrounds influence innovative work behaviour in school teachers. It is preceded by innovative intentions that are affected directly by proximal or individual factors comprising attitude towards innovation, the subjective norm for innovation and innovation efficacy as perceived behavioural control (Ajzen et al., 2007; Zhang et al., 2021).

Learning Orientation Culture contains values or activities embraced and done in a school organisation to produce and apply knowledge to increase their competitive power (Calantone et al., 2002). Some previous studies showed the influence of a learning orientation culture on innovative work behaviour. Literature reviews and document analysis on the personnel of local administrative organisations in Thailand assumed that learning orientation culture influences innovative work behaviour (Chatchawan et al., 2017). In Bali, Indonesia, a learning orientation culture has been proven to influence workers' innovative work behaviour. Learning Orientation Culture is also proven to be positively correlated to school teachers' innovative work behaviour (Rahmawati and Kurniawan, 2021).

Teacher's self-determination is the steadiness or unanimity of their profession as shown by their intrinsic motivation and compliance with their life values or goals (Fernet et al., 2008). Some previous studies proved that self-determination has an impact on innovative work behaviour. The result of a study on lecturers in five research universities in Malaysia indicated that self-determination as a part of psychological empowerment

influences innovative work behaviour (Rahman et al., 2014). A study on personnel of R&D and functional departments in Canada also examined innovative work behaviour based on a self-determination approach (Gao, 2017). A study on high-tech R & D employees also proved the contribution of self-determined motivation to innovative work behaviour (Saether, 2019).

Although previous studies have proven the influence of learning orientation culture and self-determination on innovative work behaviour, there has been no study examining the role of the two background factors or antecedents simultaneously on innovative work behaviour using the theory of planned behaviour, especially in school teachers. This study aimed to examine the contribution of learning orientation culture and self-determination to innovative work behaviour through the mediation of attitude towards innovation, the subjective norm for innovation and innovation efficacy as well as innovative intention in school teachers. The result of this study can imply the development of industrial and organisational psychology theory, especially in innovative work behaviour models in school teachers. This study can also bring theoretical and practical implications for school management in putting on the theory of planned behaviour for increasing teachers' innovative work behaviour in their schools.

2 Theoretical background and research hypotheses

2.1 Innovative work behaviour with theory planned behaviour

Innovative work behaviour includes creating, recognising and implementing new ideas to gain benefits in the role at work, group or organisation. These activities consist of three stages or dimensions, namely idea generation, idea promotion and idea realisation (Janssen, 2000).

Based on the theory of planned behaviour, innovative work behaviour should be influenced by innovative attitude, subjective norm and perceived behavioural control through innovative intention as the mediator. Based on the hypothesis of the original model, perceived behavioural control also has a direct effect on innovative work behaviour (Ajzen et al., 2007; Zhang et al., 2021). However, the result of the study on the practitioners in 152 technology-based enterprises in China showed they had innovative attitudes and perceived behavioural control only that affected these partitioners' innovative work behaviour through the mediation of innovative intentions. On the other hand, subjective norms did not affect innovative intentions. Likewise, perceived behavioural control also did not have a direct effect on innovative work behaviour (Zhang et al., 2021).

This study retested all variables of the theory of planned behaviour because the school teachers have different characteristics from those of technology-enterprises practitioners. Teachers embrace high social values and prioritise family happiness so it is assumed that subjective norms influence their innovative behaviour (Drozdikova-Zaripova et al., 2019).

According to Choi (2004), intention itself is the first step that can generate a behaviour to achieve a certain goal. Usually, it is affected by many factors such as beliefs, personal values and even the environment (Ajzen, 1991). Meanwhile, the intention to innovate itself can be interpreted as a person's intent or motivation to make changes to have a more positive impact on all aspects of life (Li et al., 2019; Alshebami,

2021). Thus, teachers' intention to innovate can be defined as the intention to make innovative changes in their learning activities. Referring to Ajzen et al. (2027), intention is one of the factors affecting the development of human behaviours including that of innovating at work. Innovative behaviour at work itself constitutes a change or a deliberate execution of new ideas, both in group and organisation to increase the performance of each individual and the group (Janssen, 2000). Teachers can be innovative by producing new ideas and executing them to answer various problems encountered during their learning process. Because innovative behaviour at work is aimed at making positive changes, intention is needed to generate the behaviour. It is in line with what Zhang et al. (2021) explained that a behaviour to innovate can arise when an individual has an intention or motivation to make an innovation. Desire or intention will encourage an individual to plan and try something so that such personal intention can predict how they will behave in the future (De Bruin et al., 2012).

H1: Innovative intention positively influences Innovative Work Behaviour.

Attitude towards innovation can be interpreted as how individuals evaluate and construe various information obtained through direct experiences so that it can change the way they behave and do something to innovate (Chapman and Hewitt-Dundas, 2018). Thus, teachers' attitudes towards innovation can be interpreted as how they perceive and evaluate, and are open to new knowledge to develop creativity and motivation to innovate. According to Chapman and Hewitt-Dundas (2018), three dimensions build attitude towards innovation. The first is support for innovation, which is how individuals provide help and support to develop ideas and resources and encourage innovative behaviour (Kraiczy et al., 2015; Felekoglu and Moultrie, 2014). This can be seen in how teachers provide or show their support for various innovations in the learning process. The second is the risk of tolerance, which reflects a person's ability and intention to encourage an innovative behaviour or activity whose result cannot be ascertained (Kraiczy et al., 2015). This shows a teacher's tolerance for a risk that may arise from the results of innovation in schools. Third is openness to external knowledge, which is the tendency of individuals to regularly use knowledge from outside (external) and recognise that it is important for the achievement of an innovation (Rodriguez et al, 2017). In the context of teachers, this can be seen from how open the teachers are to outside information that can be used for the development of innovation in schools. Furthermore, attitudes related to innovation among teachers will encourage their intention to carry out innovative behaviour themselves. This is in line with what Yunus (2014) said that an individual's attitudes towards something (certain goods, services, or behaviours) can lead to their intention to use the goods, services and behaviours. Thus, attitude towards innovation refers to the feelings that arise when evaluating certain innovations and positive support for the attitude to generate internal intentions to engage in such behaviour (Nysveen et al., 2005).

H2: Attitude towards Innovation positively influences Innovative Intention.

Subjective norms can be defined as how individuals perceive the thoughts or judgments of others regarding whether they should engage in or perform a certain behaviour so that they become able to behave outside their habits (Ajzen and Fishbein, 1975; Venkatesh and Davis, 2000). Meanwhile, in terms of innovative behaviour, Midthassel (2004) found that subjective norms in the school environment, such as the views or judgments of staff and principals, can influence how teachers want to engage in the development of more

innovative school activities. That means how the school perceives innovative behaviour can be an important indicator of teachers' willingness and motivation to engage in developing more positive teaching and learning activities. In Carmeli and Schaubroeck (2007), it is explained that subjective norms about innovation are built based on 3 things, namely customers, family and leaders. The subjective view of innovation from customers stems from their desire for quick solutions and execution to their problems. Therefore, students and parents will tend to be loyal and respond positively if teachers can engage and provide creative and innovative solutions that meet their expectations as 'customers' at school. From the family's perspective, it is not guaranteed that they will have high expectations for teachers to be involved in innovative activities at school. However, the opinions and judgments of family members can be highly valued so teachers will strive to earn their positive judgment by meeting these expectations (Carmeli and Schaubroeck, 2007). Furthermore, subjective norms held by leaders can usually influence the behaviour of many people or groups. This means that it is important for leaders such as principals to have high expectations for the emergence of innovative behaviour from teachers to create an environment with high demands for innovation in teaching and learning activities (Jung et al., 2003). However, it is important to note that each individual or group can have different expectations or judgment references. Therefore, it is also important for leaders to be able to avoid subjective norms that have the potential to cause conflict (Howell and Higgins, 1990; Carmeli and Schaubroeck, 2007).

H3: Subjective Norm for Innovation positively influences Innovative Intention.

Innovation efficacy is a person's belief in their ability to make an effective and efficient innovation, which implies whether the person will engage in or bring about innovation behaviour in the future (Ruskin et al., 2016; Mahroum and Al-Saleh, 2013). In the context of teachers, teacher efficacy is related to the implementation of effective and efficient classroom management innovations and strategies (Hoy and Spero, 2005). It means that teachers' judgments and assumptions can predict their goals and attitudes that are more open to innovative behaviour and change (Tschannen-Moran and Hoy, 2001). Thus, teachers will be more motivated to innovate to solve problems that commonly occur in teaching and learning activities. Brockhus et al. (2014) explained that self-efficacy in creativity to innovate consists of personal assumptions/beliefs and evidence-based assessment of creativity. Teachers' personal beliefs or assumptions are teachers' self-efficacy about how they are creative enough to solve problems in teaching and learning activities at school. Meanwhile, teachers' self-efficacy can also be based on the amount of evidence that shows they have made innovations in teaching and learning activities. On the other hand, self-efficacy related to innovation can lead to the intention or motivation from within to innovate. This is mainly triggered by the emergence of an intention to innovate, which is an emerging attitude related to innovative behaviour and self-efficacy of teachers (Douglas and Fitzsimmons, 2013).

H4: Innovation Efficacy positively influences Innovative Intention.

On the other hand, teachers' belief in their ability to innovate is closely related to how they will manifest innovative behaviour in the workplace. Gong et al. (2009) found that employees with high levels of efficacy for creativity tend to have higher creativity in their work so that they are more able to engage in practicing their creative ideas to innovate and bring change to the company. Thus, the extent to which teachers believe in their ability to innovate can influence their behaviour toward implementing new and

more innovative practices or ways of teaching (Ghaith and Yaghi, 1997). The latest research also proves that self-efficacy as one of the dimensions of teacher empowerment can affect innovative work behaviour (Mokhlis and Abdullah, 2024).

H5: Innovation Efficacy positively influences Innovative Work Behaviour.

2.2 Learning orientation culture

Learning orientation culture refers to activities done by the entire organisation to create and use their knowledge to increase their excellence, which affects the information they have collected and how the information is interpreted, evaluated and shared (Calantone et al., 2002). It is related to how a school supports its educators to keep learning and developing themselves, being open to new information or knowledge, evaluating and sharing things they obtain from activities of learning and teaching. This culture can also make individuals feel that they have the support resources to meet the demands of the workplace and to be able to be open and have an attitude of always being ready for changes that occur through various innovations (Bakker et al., 2014; Kwon and Kim, 2020). Learning orientation is a mindset that can motivate people to develop their competencies (Dweck, 2000). This means that schools with this kind of culture will encourage teachers to seek challenges that can provide them with opportunities to learn new things and make changes to achieve innovations to solve these challenges (Atitumpong and Badir, 2018).

According to Calantone et al. (2002), several components make up a learning orientation culture. The first is a commitment to learning, which is related to schools that continuously value and encourage teachers to develop themselves (Sinkula et al., 1997). A school culture with a commitment to learning will consider self-development as an investment that will bring long-term benefits to the teaching and learning process. Thus, it is also important for teachers to use work time to pursue knowledge beyond the scope of their work (Calantone et al., 2002; Slater and Narver, 1994). Second is a shared vision, where a learning orientation culture will be meaningless if it is not accompanied by a vision (Verona, 1999). This means that the school's vision should be a goal and a guideline for teachers to strive to develop themselves and apply new information to create a supportive learning environment (Calantone et al., 2002). Next is open-mindedness, which is the willingness of a school to critically evaluate its operations and the willingness to accept new ideas and innovations from teachers. This can be seen from how the school and teachers dare to study, evaluate, criticise and update existing policies and teaching and learning methods (Verona, 1999). Furthermore, the willingness to share information within the school organisation is also important for the sustainability of a learning orientation culture. In an organisation such as a school, knowledge sharing refers to educators' beliefs regarding the dissemination of new information beyond their expertise that could be beneficial to the development of others and the school itself (Moorman and Miner, 1998; Lukas et al., 1996).

H6: Learning Orientation Culture positively influences Attitude towards Innovation.

A learning-oriented school culture can influence how the school views teachers who are willing to innovate to develop the school. Principals who maintain and consider the importance of a culture of continuous learning and openness to change make teachers more committed to innovating in the learning process (Bryk et al., 1999; Midthassel

and Bru, 2001). This means that teachers' process of self-development and commitment to openness to new information, supported by positive subjective norms from the school, make the process of information exchange more interactive to solve challenges and realise the school's vision (Midthassel, 2004).

H7: Learning Orientation Culture positively influences Subjective Norm for Innovation.

A learning orientation culture can influence teachers' self-efficacy regarding innovation behaviour because learning orientation is intended to improve teachers' abilities, knowledge, skills and competencies (Atitumpong and Badir, 2018). This can be done by obtaining and sharing useful information to increase confidence in developing superior school services and programs (Benjamin and Flynn, 2006). An increase in knowledge and skills allows for an increase in teachers' self-efficacy regarding the feasibility of new innovative ideas to be promoted in the school environment. Thus, teachers who have better knowledge and skills tend to see new or difficult tasks as challenges to learn new things, and be more confident in making innovations for overcoming the challenges (Runhaar et al., 2016; Tschannen-Moran and Hoy, 2001).

H8: Learning Orientation Culture positively influences Innovation Efficacy.

Learning orientation culture as background information (experience and knowledge) in the theory of planned behaviour model (Ajzen et al., 2007) influences school teachers' innovative work behaviour following the existence of innovative intention directly affected by proximal or individual factors comprising attitude toward innovation, subjective norm for innovation and innovation efficacy as perceived behavioural control (Ajzen et al., 2007; Zhang et al., 2021).

H9a: Attitude toward innovation and innovative intention mediate the relationship between learning orientation culture and innovative work behaviour.

H9b: Subjective norm for innovation and innovative intention mediate the relationship between learning orientation culture and innovative work behaviour.

H9c: Innovation efficacy and innovative intention mediate the relationship between learning orientation culture and innovative work behaviour.

2.3 Self-determination

Self-determination emphasises one's natural motivational tendencies to keep learning, developing and gaining support from others (Vasconcellos et al., 2020). Self-determination is assumed to make an individual inherently connected to their psychological growth so that they will continue to move towards learning, mastery and connection with other people (Ryan and Deci, 2020). Teachers may consider themselves competent but some of them perform tasks because they understand the value of their work and others engage in work because of external pressure or benefits derived from their work. Self-determination coming from self-motivation such as intrinsic motivation and identified regulation will be more dominant than that from external motivation (Fernet et al., 2008). Fernet et al. (2008) explained that teachers' intrinsic motivation encourages them to work because they feel pleasure or satisfaction when doing the job. Meanwhile, identified regulation drives teachers to work because they realise the importance of the work and it is in line with their values or life goals. Furthermore,

motivation driven by self-determination can be associated with positive attitudes and intentions toward more innovative teaching processes (Hein et al., 2012; Gorozidis and Papaioannou, 2014).

H10: Self-Determination positively influences Attitude towards Innovation.

Self-determination makes an individual tend to grow and move towards something that satisfies their internal motivation so that they can keep developing and functioning well in daily life (Al-Jubari et al., 2019). Motivation plays an important role in forming human attitudes that can be subjective norms and perceived behavioural control (Fayolle et al., 2014). This means that one's self-determination regarding innovation influences their perception, thinking and valuation of the behaviour. If the subjective norm of the environment supports innovative behaviour, an individual will tend to appear with innovative behaviour because they need to be accepted and connected with other people or the environment (Van den Broeck et al., 2010). Self-determination makes an individual strive to meet their basic psychological need, autonomy, competence and connection with other people (Hagger et al., 2006). For example, the need for autonomy does not necessarily reflect a desire to be independent in itself, but rather interdependent through choice and collaboration such as the need to connect with others (Hagger et al., 2006; Deci and Ryan, 2000).

H11: Self-Determination positively influences Subjective Norm for Innovation.

In the same way, self-determination can also influence self-efficacy in innovation. Teachers' self-determination can encourage them to utilise various strategies to increase learning motivation, student engagement in the learning process, willingness to engage in the training process and innovation-related self-efficacy (Fernet et al., 2012; Jansen in de Wal et al., 2014).

H12: Self-Determination positively influences Innovation Efficacy.

Self-determination as background disposition (global attitude) in the theory of planned behaviour model (Ajzen et al., 2007) also influences school teacher's innovative work behaviour following the existence of innovative intention affected directly by proximal or individual factors comprising attitude toward innovation, subjective norm for innovation and innovation efficacy as perceived behavioural control (Ajzen et al., 2007; Zang et al., 2021).

H13a: Attitude toward innovation and innovative intention mediate the relationship between Self-determination and innovative work behaviour.

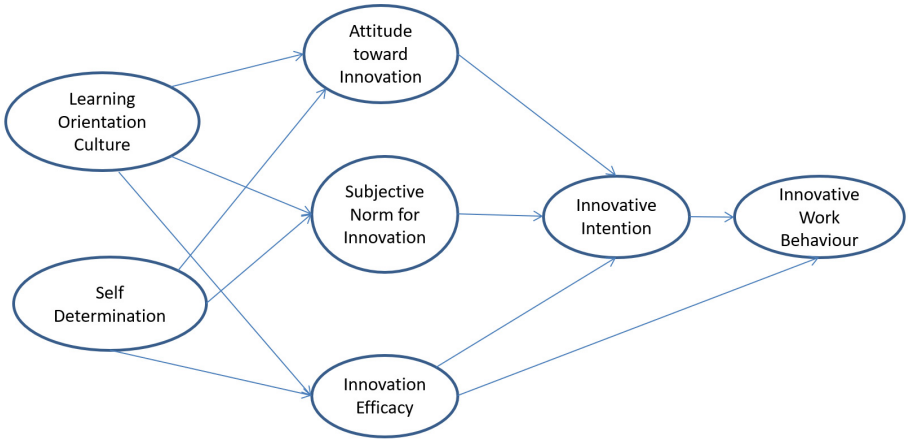
H13b: Subjective norm for innovation and innovative intention mediate the relationship between self-determination and innovative work behaviour.

H13c: Innovation efficacy and innovative intention mediate the relationship between self-determination and innovative work behaviour.

Self-determination as background dispositions (global attitude) in the theory of planned behaviour model (Ajzen et al., 2007) will also affect school teacher's innovative work behaviour following the existence of innovative intention affected directly by proximal or individual factors, which include attitude toward innovation, subjective norm for innovation and innovation efficacy as perceived behavioural control (Ajzen et al., 2007; Zhang et al., 2021).

Based on the description above, this research model is shown in Figure 1.

Figure 1 School teacher's innovative work behaviour framework model



3 Research methods

This study used a quantitative approach with a survey method. Moreover, the sample for this study was selected using a purposive sampling technique, which involves choosing participants based on specific criteria aligned with the research objectives. There are 373 respondents of this study with criteria K-12 teachers who had worked for at least one year in private schools that support the development of innovative work behaviour of their teachers and are located on the island of Java, Indonesia. The island itself has the biggest population and the biggest number of teachers in Indonesia (Febrian, 2022). They worked at different education levels that constitute formal basic education or K-12 starting from playgroup, kindergarten, elementary, junior high school to senior high school (Allee-Herndon and Roberts, 2021). All the respondents had completed informed consent before responding to the survey.

Data were collected using seven scales measured by a 5-point Likert scale, namely the innovative work behaviour scale, innovative intention scale, attitude towards innovation scale, subjective norm for innovation scale, innovation efficacy scale, learning orientation culture scale and self-determination scale. All these scales were modified into Bahasa Indonesia through focus group discussions with 24 school leaders and teacher representatives from all levels. Appendix 2 shows Measurement Scale Construct and Items in English translation.

The innovative work behaviour scale was modified from Janssen (2000), which consists of three stages or dimensions. The idea generation dimension has a reliability of $\alpha = 0.802$ with an example item, 'I find new ideas to overcome problems in learning'. The idea promotion dimension has a reliability of $\alpha = 0.808$ with an example item, 'School leaders become enthusiastic about my innovative ideas'. The idea realisation dimension has a reliability of $\alpha = 0.779$ with an example item, 'I implement my innovative ideas in activities that are beneficial in learning'.

The innovative intention scale was modified from Choi (2004) and Li et al. (2019). This innovation intention scale is unidimensional with reliability $\alpha = 0.907$. An example item of this scale is 'I intend to develop methods or teaching aids that are innovative and have a positive impact on learning'.

The attitude towards innovation scale was modified from Chapman and Hewitt-Dundas (2018), which consists of three dimensions. The support for innovation dimension has a reliability of $\alpha = 0.907$ with an example item 'I support creativity in learning'. The risk of tolerance dimension has a reliability of $\alpha = 0.873$ with an example item, 'I like to try new things in learning'. The openness to external knowledge dimension has a reliability of $\alpha = 0.778$ with an example item 'I am open to new information to develop innovative ideas in learning'.

The subjective norm for innovation scale was modified from Carmeli and Schaubroeck (2007), which consists of three sources or dimensions. The family expectation for the creativity dimension has a reliability of $\alpha = 0.759$ with an example item, 'My family members consider creativity important for my profession as a teacher'. The leader expectation for the creativity dimension has a reliability of $\alpha = 0.731$ with an example item, 'My superiors at school expect me to be a creative teacher'. The customer expectation for the creativity dimension has a reliability of $\alpha = 0.726$ with an example item, 'My students and/or their parents might be disappointed if I am not creative'.

The innovation efficacy scale was modified from Brockhus et al. (2014), which consists of two dimensions. The personal assumptions/beliefs about own creativity dimension have a reliability of $\alpha = 0.871$ with an example item, 'I consider myself an innovative teacher'. The evidence-based assessment of the creative self-efficacy dimension had reliability of $\alpha = 0.937$ with the sample item, 'I have more creative ideas than other teacher colleagues'.

The learning orientation culture scale was modified from Calantone et al. (2002), which consists of four dimensions. The commitment to learning dimension has a reliability of $\alpha = 0.853$ with an example item, 'The learning (development) of teachers and education personnel is considered a profitable investment, not a detrimental cost, in our school'. The shared vision dimension has a reliability of $\alpha = 0.828$ with an example item, 'All teachers and education personnel are committed to achieving the school vision'. The open-mindedness dimension has a reliability of $\alpha = 0.766$ with an example item, 'We regularly evaluate policies and activities in the school'. The intra-organisational knowledge sharing dimension has a reliability of $\alpha = 0.794$ with an example item, 'We always share the results of evaluating failures in this school with all teachers and education personnel, so that they are not repeated'.

The self-determination scale was modified from Fernet et al. (2008), which consists of two dimensions. The intrinsic motivation dimension has a reliability of $\alpha = 0.842$ with an example item, 'I work as a teacher because this job is fun'. The identified regulation dimension has a reliability of $\alpha = 0.845$ with an example item, 'I work as a teacher because this profession has a positive impact'.

The collected data were analysed using the Structural Equation Model with Confirmatory Factor Analysis. This study did not require a normality test because the number of respondents in the study was more than 100 subjects so the distribution could be assumed to be normal (Katz, 2011).

4 Results

Based on the CFA measurement model (outer model) all factor loadings were greater than 0.5 (significant). Factor loadings for items of innovative work behaviour are 0.71–0.81; innovative intention are 0.60–0.89; attitude toward innovation are 0.60–0.82; subjective norm for innovation are 0.51–0.88; innovation efficacy are 0.69–0.86; learning orientation culture are 0.52–0.81 and self-determination are 0.77–0.85 as stated in Table 1.

Table 1 Factor loading, composite reliability, Cronbach's alpha and average variance extracted

Construct and associated items	*Factor loading*	*t-value*	*Composite reliability*	*Cronbach's alpha*	*Average variance extracted*
Innovative work behaviour			0.922	0.908	0.568
IG1	0.790	13,070			
IG2	0.730	13,070			
IG3	0.760	17,970			
IP1	0.810	18,521			
IP2	0.770	13,070			
IP3	0.710	17,970			
IR1	0.750	18,521			
IR2	0.740	13,070			
IR3	0.720	17,970			
Innovative intention			0.913	0.907	0.639
IB1	0.790	13,070			
IB2	0.880	13,070			
IB3	0.890	17,970			
IB4	0.830	18,521			
IB5	0.770	13,070			
IB6	0.600	17,970			
Attitude toward innovation			0.916	0.928	0.479
SI1	0.640	12,200			
SI2	0.670	14,006			
SI4	0.820	17,056			
RT1	0.750	14,012			
RT2	0.630	14,621			
RT3	0.690	12,206			
RT4	0.800	8,800			
RT5	0.630	14,688			
OE1	0.740	16,811			
OE2	0.600	18,066			
OE3	0,680	19,164			
OE4	0,610	16,885			

Table 1 Factor loading, composite reliability, Cronbach's alpha and average variance extracted (continued)

Construct and associated items	*Factor loading*	*t-value*	*Composite reliability*	*Cronbach's alpha*	*Average variance extracted*
Subjective norm for innovation			0.908	0.886	0.449
FE1	0.520	15,438			
FE2	0.790	15,438			
FE3	0.880	16,874			
FE4	0.510	15,698			
LE1	0.400	15,438			
LE2	0.780	16,874			
LE3	0.850	15,698			
LE4	0.480	15,438			
LE5	0.590	16,874			
CST1	0.430	15,698			
CST2	0.800	15,438			
CST3	0.850	16,874			
CST4	0.540	15,698			
Innovation efficacy			0.954	0.948	0.614
PA1	0.690	13,070			
PA2	0.740	13,070			
PA3	0.800	17,970			
PA4	0.830	18,521			
PA5	0.760	13,070			
EBA1	0.740	17,970			
EBA2	0.800	18,521			
EBA3	0.820	13,070			
EBA4	0.840	17,970			
EBA5	0.680	18,521			
EBA6	0.820	13,070			
EBA7	0.780	17,970			
EBA8	0.860	18,521			
Learning orientation culture			0.947	0.920	0.478
CL1	0.600	19,891			
CL2	0.690	21,531			
CL3	0.640	21,539			
CL4	0.670	22,781			
CL5	0.810	19,891			
CL6	0.800	21,531			
SV1	0.720	21,539			
SV2	0.770	22,781			

Table 1 Factor loading, composite reliability, Cronbach's alpha and average variance extracted (continued)

Construct and associated items	*Factor loading*	*t-value*	*Composite reliability*	*Cronbach's alpha*	*Average variance extracted*
SV3	0.790	19,891			
SV4	0.710	21,531			
OM1	0.520	21,539			
OM2	0.750	22,781			
OM3	0.680	19,891			
OM4	0.760	21,531			
OM5	0.530	21,539			
ITG1	0.570	22,781			
ITG2	0.640	19,891			
ITG3	0.610	21,531			
ITG4	0.740	21,539			
ITG5	0.720	22,781			
Self-determination			0.919	0.891	0.654
IM1	0.850	11,510			
IM2	0.770	10,350			
IM3	0.800	10,813			
IRG1	0.840	11,510			
IRG2	0.820	10,350			
IRG3	0.770	10,813			

The Table 1 shows how reliable the seven variables are, as measured by Cronbach's alpha, composite reliability and average variance extracted. The Cronbach's alphas for all variables are above the acceptable level of .70. The composite reliability for all measures is above the acceptable level of .60 (Fornell and Larcker, 1981).

Nevertheless, the Average Variance Extracted (AVE) ranges from 0.449 to 0.654. Some AVE of variables, namely attitude toward innovation (0.479), subjective norm for innovation (0.449) dan learning orientation (0.478), are below the recommended level of .5. According to Fornell and Larcker (1981), the average variance extracted might be a more conservative measure of how well the measurement model works. They also say that 'based on composite reliability alone, the researcher can conclude that the construct's convergent validity is good, even though more than 50% of the variance is due to error' (p.46). Since the composite reliability of the three concepts is well above the recommended level, the internal reliability of the measurement items is considered acceptable.

The results of construct validity for each variable in measurement model (outer model) shows the goodness-of-fit test indicated that almost of all variables are Good Fit, and there are two variables are marginal fit. Marginal fit is a condition of model scaling consistency that is slightly below the absolute fit criteria, or incremental fit, but can still be accepted or continued in further analysis, because it is close to the criteria for a good fit measure (Santoni and Harahap, 2018; Vizano et al., 2021; Syamsudin et al., 2022).

The construct validity of each variable is as shown in Table 2.

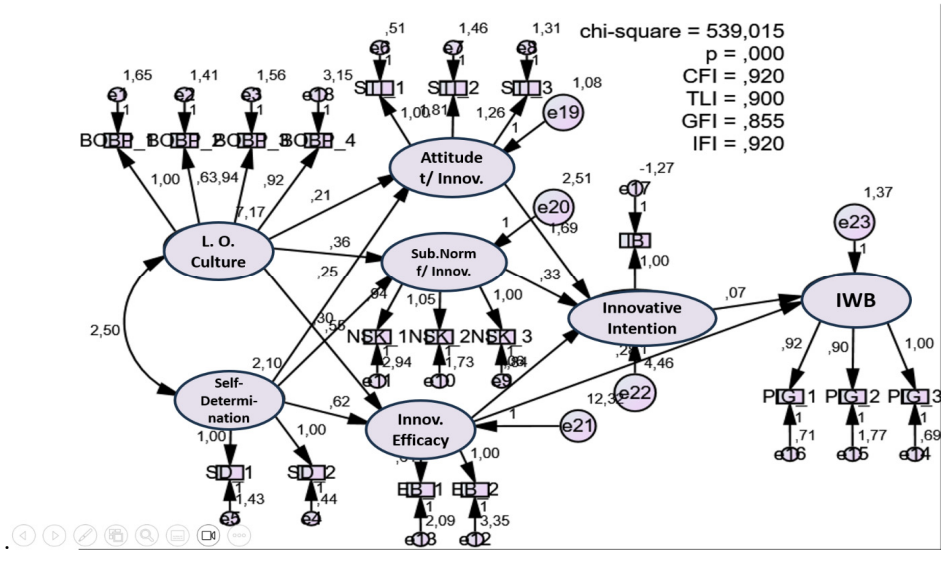
Table 2 Construct validity of each variable (outer model)

Construct model	*χ2*	*CFI*	*TLI*	*GFI*	*IFI*
Innovative Work Behaviour	69,116 (p = 0.000)	0.974	0.961	0.959	0.974
Innovative Intention	113,977 (p = 0.000)	0.932	0.887	0.901	0.932
Attitude Toward Innovation	242,754 (p = 0.000)	0.914	0.889	0.892	0.915
Subjective Norm for Innovation	500,857 (p = 0.000)	0.853	0.802	0.835	0.853
Innovation Efficacy	380,214 (p = 0.000)	0.911	0.891	0.852	0.911
Learning Orientation Culture	594,910 (p = 0.000)	0.892	0.875	0.856	0.893
Self Determination	64,774 (p = 0.000)	0.955	0.916	0.946	0.920

Note: χ^2 with p-value > 0.05 = Fit; CFI, TLI, GFI, IFI >= 0.90 = Fit; >= 0.80 = Marginal Fit.

The results of the structural model (inner model) from the data analysis of this study are shown in Figure 2.

Figure 2 School teacher's innovative work behaviour model analysis (see online version for colours)



Based on Figure 2, the goodness-of-fit test indicated that CFI, TLI, and IFI were a perfect fit, while GFI was a marginal fit. Thus, the overall teachers' innovative work behaviour model was a good fit.

5 Discussion

Based on Table 3, all the hypotheses excluding the fourth one could be accepted. H1 was accepted (β = 0.075; p < 0.05) for showing that innovative intention positively influenced innovative work behaviour. H2 was confirmed (β = 1.693; p < 0.01) for showing that

attitude toward innovation positively influenced innovative intention. H3 was accepted (β = 0.328; p < 0.01) for showing that the subjective norm for innovation positively influenced innovative intention. Yet, H4 was rejected because innovation efficacy negatively affected innovative intention, in which the direction of the correlation between them was opposite to that of the hypothesis. However, H5 was accepted (β = 0.283; p < 0.01) for showing that innovation efficacy positively influenced innovative work behaviour.

Table 3 Structural model (inner model)

Path	*β & p-value*	*C.R.*
Innovative Intention --> Innovative Work Behaviour	.075**	2.431
Attitude Toward Innovation --> Innovative Intention	1.693***	16.967
Subjective Norm for Innovation --> Innovative Intention	.328***	5.470
Innovation Efficacy --> Innovative Intention	–.063**	–2.206
Innovation Efficacy --> Innovative Work Behaviour	.283***	13.015
Learning Orientation Culture --> Attitude Toward Innovation	.215***	6.417
Learning Orientation Culture --> Subjective Norm for Innovation	.359***	7.002
Learning Orientation Culture --> Innovation Efficacy	.550***	4.994
Self-Determination --> Attitude Toward Innovation	.253***	3.953
Self-Determination --> Subjective Norm for Innovation	.299***	3.073
Self-Determination --> Innovation Efficacy	.615***	2.921

Note: *** p < 0.01; ** p < 0.05.

The effect of learning orientation culture on innovative work behaviour through the mediation of attitude toward innovation, subjective norm for innovation, innovation efficacy, and innovative intention in school teachers, in general, has been tested. H9a was confirmed by the acceptance of H6 (β = 0.215; p < 0.01), H2 (β = 1.693; p < 0.01) and H1 (β = 0.075; p < 0.05), proving that attitude toward innovation and innovative intention mediate the relationship between learning orientation culture and innovative work behaviour. H9b was confirmed by the acceptance of H7 (β = 0.359; p < 0.01), H3 (β = 0.328; p < 0.01) and H1 (β = 0.075; p < 0.05), proving that subjective norm for innovation and innovative intention mediate the relationship between learning orientation culture and innovative work behaviour. H9c was partly confirmed because the influence of learning orientation culture on innovative work behaviour could take place only through the mediation of innovation efficacy with the acceptance of H8 (β = 0.550; p < 0.01) and H5 (β = 0.283; p < 0.01), but it could not happen through the second mediator, namely innovative intention because H4 (β = –0.063; p < 0.05) was rejected. Accordingly, learning orientation culture affects innovative work behaviour through innovation intention when mediated by attitude toward innovation and subjective norm for innovation. However, when mediated by innovation efficacy, it cannot be mediated by innovation intention because its effect is negative while innovation efficacy can affect positively and directly innovative work behaviour.

The effect of self-determination on innovative work behaviour through the mediation of attitude toward innovation, subjective norm for innovation, innovation efficacy and innovative intention in school teachers, in general, has also been tested. H13a was confirmed by the acceptance of H10 (β = 0.253; p < 0.01), H2 (β = 1.693; p < 0.01) and

H1 ($\beta = 0.075$; $p < 0.05$) so it was proven that attitude toward innovation and innovative intention mediate the relationship between self-determination and innovative work behaviour. H13b was confirmed by the acceptance of H11 ($\beta = 0.299$; $p < 0.01$), H3 ($\beta = 0.328$; $p < 0.01$) and H1 ($\beta = 0.075$; $p < 0.05$) so it was proven that subjective norm for innovation and innovative intention mediate the relationship between self-determination and innovative work behaviour. H13c was partially confirmed because the effect of self-determination on innovative work behaviour could only occur through the mediation of innovation efficacy with the acceptance of H12 ($\beta = 0.615$; $p < 0.01$) and H5 ($\beta = 0.283$; $p < 0.01$), but not through the second mediator, namely innovative intention because H4 was rejected ($\beta = -0.063$; $p < 0.05$). Thus, the effect of self-determination on innovative work behaviour can occur through innovation intention when mediated by attitude toward innovation and subjective norm for innovation. However, when mediated by innovation efficacy, it cannot be mediated by innovation intention because its effect is negative while innovation efficacy can affect positively and directly innovative work behaviour.

Innovative work behaviour in those school teachers was partly proven to be preceded by innovative intention (Ajzen, 2002; Zhang et al., 2021). Innovative intention is also proven to be influenced by attitude towards innovation (Nysveen et al., 2005) and subjective norm for innovation (Ajzen and Fishbein, 1975; Venkatesh and Davis, 2000). Meanwhile, innovation efficacy was proven to have a direct effect on innovative work behaviour (Ghaith and Yaghi, 1997).

Based on the overall model, the two background factors or antecedents, namely learning orientation culture and self-determination, were proven to influence school teachers' innovative work behaviour through the theory of planned behaviour process. The learning orientation culture was proven to be an antecedent in this research model through its influence on attitude towards innovation, the subjective norm for innovation and innovation efficacy (Bakker et al., 2014; Kwon and Kim, 2020; Midthassel, 2004; Runhaar et al., 2016; Tschannen-Moran and Hoy, 2001). Similarly, self-determination was proven to be an antecedent in this research model through its influence on attitude towards innovation, the subjective norm for innovation, and innovation efficacy (Hein et al., 2012; Gorozidis and Papaioannou, 2014; Hagger et al., 2006; Fernet et al., 2012; Jansen in de Wal et al., 2014).

However, the two background factors or antecedents could only affect innovative work behaviour through innovation intention when mediated by attitude toward innovation and subjective norm for innovation. On the other hand, their relationship with innovative work behaviour through innovation efficacy could not be mediated by innovation intention because the effect was negative. Innovation efficacy had a direct effect on innovative work behaviour. These results contradict many other studies that support the theory of planned behaviour, where perceived behavioural control or self-efficacy should have a positive effect on behaviour intention. These contradictory research results need to be discussed further.

Although the majority of previous research supported the theory of planned behaviour, the result of one other study showed the negative effect of perceived behavioural control or self-efficacy on behaviour intention. According to the result of the study, the negative effect caused by too high self-efficacy made the individuals overconfident and overoptimistic so they could not produce good work performance (Rosalina and Satrya, 2021).

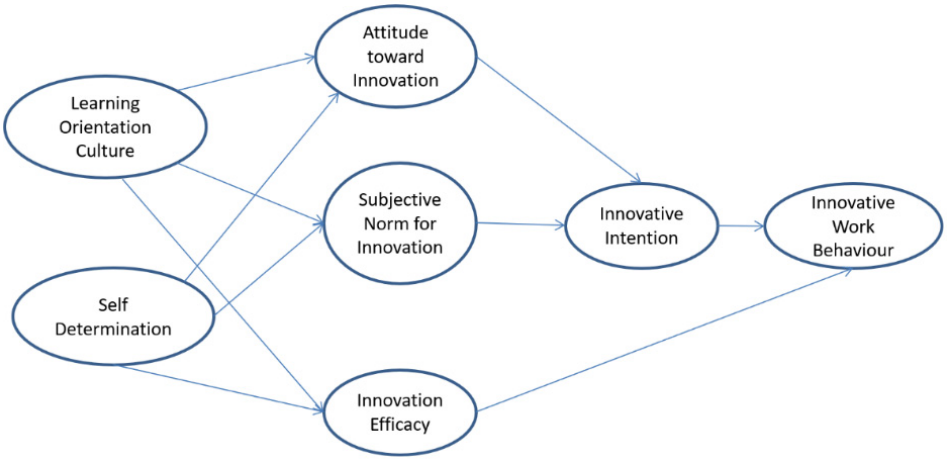
The argument from Rosalina and Satrya (2021) could not be applied to this study. In this study, although innovation efficacy had a negative effect on innovative intention, innovation efficacy had a positive effect on the school teachers' innovative work behaviour. Therefore, their work performance continued to increase. The negative effect might have been more due to burnout experienced by the teachers so their efficacy weakened their plans or intentions to innovate. This result supported the survey results of Maslach et al. (2001) which showed that 50 to 70% of teachers in Asian countries experienced burnout. Innovation efficacy made the teachers aware that they were able to make innovations but also made them aware that innovation required sufficient energy and time to realise it. Thus, they did not plan or have the intention to innovate. Teachers with high job demands will do crafting behaviour to improve their work-life balance (Eslami et al., 2024). However, innovation efficacy encouraged school teachers' innovative work behaviour toward learning process tasks in schools that had become their obligations. However, they did not plan or intend to add innovation tasks because many had experienced burnout. This argument provides suggestions for further research to examine burnout in school teachers as an intervening variable.

The negative effect of innovation efficacy on innovative intention is also inseparable from the role of a learning orientation culture as an antecedent in this research model. Sujan et al. (1994) proved that a learning orientation culture applied in an agency will encourage sales managers to work smartly, namely making flexible plans according to situations and conditions, including changing their work strategies to produce more effective work performance. The role of high self-efficacy will strengthen the influence of learning orientation on smart working rather than hard working (Sujan et al., 1994). Similarly, learning orientation in schools will increase school teacher's innovation efficacy. However, due to the high workload, the learning orientation and innovation efficacy will reduce their innovative intention as a smart working strategy to save energy and still increase innovative work behaviour as their work performance.

Self-determination as an antecedent also plays a role in the negative effect of innovation efficacy on innovative intention in this research model. Intrinsic motivation as a dimension of self-determination is closely related to realistic goals (Benlahcene et al., 2021). Self-determination in school teachers will encourage innovation efficacy to achieve realistic goals, including reducing their innovative intention if it feels too burdensome and unrealistic to achieve innovative work behaviour as their goal, but still develop innovative work behaviour which is their obligation.

Based on the explanation above, model modification was done by removing the path of innovation efficacy's effect on innovative intention. The results of the model modification showed that goodness of fit CFI = 0.920, TLI = 0.901 and IFI = 0.920 were fit, while GFI = 0.854 was marginal fit. They also showed all the paths had a positive and significant standardised coefficient (β) ($P < 0.05$). The modification of teachers' innovative work behaviour model is shown in Figure 3.

Figure 3 School teacher's modified innovative work behaviour model (see online version for colours)



Based on the modification, it can be understood that the application of the theory of planned behaviour within the context of school teachers' innovative behaviour is fairly different from the application within a general context, especially in the removal of the influence path of innovation efficacy to innovative intention. In this modified model, the background factors or antecedents, namely learning orientation culture and self-determination, can improve innovative work behaviour through innovative intention with the mediation of attitude toward innovation and subjective norm for innovation. They can also affect innovative work behaviour with the mediation of innovation efficacy and without innovative intention because the background factors make teachers work smarter and have more realistic goals in developing their innovative work behaviour as explained above.

The role of learning orientation culture as an antecedent in the teacher's innovative work behaviour model in this study is supported by a study conducted by Atitumpong and Badir (2018) which proved that learning orientation has a positive influence on innovative work behaviour through the intermediary of creative self-efficacy. When an individual has a high learning orientation, they are more likely to develop strong creative self-efficacy because they are constantly trying to improve their competence. This then encourages them to engage in innovative work behaviour because they feel confident in their ability to generate new ideas.

Learning orientation culture can also have an impact on innovative work behaviour through the role of attitude, subjective norms and self-efficacy in the theory of planned behaviour which turns out to be a form of job satisfaction. This is supported by the results of research by Wiranto et al. (2020) which proves that learning orientation can influence innovative work behaviour through job satisfaction. Meanwhile, Hemsworth et al. (2024) explained that in the theory of planned behaviour applied to employees, job satisfaction is the main determining factor. A positive attitude towards work behaviour is likely to increase an individual's job satisfaction. Subjective norms do not directly influence job satisfaction but they can influence an individual's intention to perform a

behaviour, which in turn can impact job satisfaction. While perceived behavioural control can influence an individual's intention to perform a behaviour, which in turn can impact job satisfaction.

Self-determination plays a role as an antecedent in the teacher's innovative work behaviour model in this study, supported by a study by Wang and Panaccio (2020) which states that self-determination can have an impact on innovative work behaviour. Self-determination is facilitated by the fulfilment of psychological needs that can increase innovative work behaviour through autonomous motivation, consisting of intrinsic motivation and identified motivation.

The role of self-determination in innovative work behaviour is also supported by the results of the study by Tamunosiki-Amadi and Dede (2015) which proves the role of self-determination in increasing innovative work behaviour. Self-determination gives employees the authority and freedom to change their working conditions, which can ultimately improve task completion and reduce operational rigidity that inhibits innovation.

The modification of this research model that eliminates the path from innovation efficacy to innovative intention is also supported by the results of the study by Hsu et al. (2018) which proves that the influence of entrepreneurial self-efficacy on entrepreneurial intention also depends on the condition of the individual's person-entrepreneurship fit. For individuals who feel that they are not fit with entrepreneurial activities, entrepreneurial self-efficacy will not have an impact on the intention of the behaviour. The results of the study by Hsu et al. (2018) also provide suggestions for further research to examine person-innovation fit in school teachers as an intervening variable.

The results of the study by Sahin et al. (2019) also strengthen the modification of the model in this study where the study proves that self-efficacy does not always affect behavioural intention. The study proves that individuals with low emotional stability tend to have low entrepreneurial intention even when combined with high entrepreneurial self-efficacy. The results of the study by Sahin et al. (2019) also provide suggestions for further research to examine emotional stability in school teachers as an intervening variable.

This study offers valuable contributions for management in education, both theoretically and practically. Theoretically, it contributes to a deeper understanding of self-efficacy by demonstrating that its impact on behavioural intention is not always straightforwardly positive. This finding suggests that the relationship between self-efficacy and behaviour is more complex than previously assumed and warrants further investigation. Future research should explore the contextual factors that moderate this relationship, leading to a more nuanced and comprehensive understanding of how self-efficacy influences individual actions, especially for school teachers in educational management context.

Practically, the study provides recommendations for school management to enhance teachers' professionalism through background factors, namely learning orientation culture and self-determination. By fostering these factors, school management can encourage teachers to embrace innovative work behaviours and contribute to a more dynamic and effective learning environment.

This study acknowledges certain limitations. While the overall model fit was satisfactory, some construct validity measures were classified as marginal fit. This suggests that further refinement of the scales used to assess key constructs is necessary to ensure greater accuracy and reliability in future research. Future research also

recommended to add the burnout, person-innovation fit and emotional stability pada school teachers variable as a intervening variables between innovation efficacy and innovative intention. By incorporating burnout, person-innovation fit and emotional stability, researchers can gain a deeper understanding of how burnout impacts teachers' innovative intentions and explore potential mitigating factors.

6 Conclusions

School teachers' innovative work behaviour model in this study proved the role of learning orientation culture and self-determination as antecedents of innovative work behaviour by modifying the theory of planned behaviour by removing the influence path of innovation efficacy to innovative intention.

This study provides valuable contributions for the management in education, both theoretically and practically. Theoretically, it contributes to a deeper understanding of self-efficacy by demonstrating that its impact on behavioural intention is not always straightforwardly positive. This finding suggests that the relationship between self-efficacy and behaviour is more complex than previously assumed and warrants further investigation. Practically, the study provides recommendations for school management to enhance teachers' professionalism through background factors, namely learning orientation culture and self-determination. By fostering these factors, school management can encourage teachers to embrace innovative work behaviours and contribute to a more dynamic and effective learning environment.

This study recognises certain limitations, particularly in the construct validity of some measures, which were classified as marginal. This suggests that further refinement of the scales used to assess key constructs is necessary to ensure greater accuracy and reliability in future research. Future studies should also consider incorporating burnout, person-innovation fit and emotional stability as an intervening variables in the relationship between innovation efficacy and innovative intention. This inclusion would enable a more nuanced understanding of the impact of burnout on school teachers and provide valuable insights into potential mitigating factors.

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Appendix 1: State of the arts about innovative work behaviour model

Authors	*Year*	*Model framework*	*Variables that influence IWB*	*Respondent*	*Negara*
Yuan and Woodman	2010	Innovative Behaviour using Performance and Image Outcome Expectations: The Theoretical Model	* Expected image risks * Expected image gains * Expected positive performance outcomes * Intrinsic interest * Perceived organisation support for innovation * Supervisor relationship quality * Innovativeness as a job requirement * Reputation as innovative * Dissatisfaction with the status quo	425 full-time employees and their 96 direct supervisors from 4 US companies in several different industries	USA
Odoardi et al.	2015	Innovative Behaviour using Perceptions of Contextual Factors, Perception of Group Processes and Psychological Empowerment: The Theoretical Model	* Psychological Empowerment * Group Support for Innovation * Group Vision * Teamwork * Information Sharing * Participative Leadership	443 Italian-speaking employees from 5 companies.	Italy
Li et al.	2016	Proactive Personality and Innovative Work Behaviour: The Mediating Effects of Affective States and Creative Self-Efficacy	* Creative Self-Efficacy * Positive Affect * Negative Affect * Proactive Personality	374 teachers from seven primary and secondary schools in mainland China	China
Roffeei et al.	2017	Innovative Behaviour using Perceptions of Innovation Culture	* Innovation Culture * Effective Communication *Climate for Innovation * Self-Efficacy	1008 undergraduate students from five public research universities in Malaysia	Malaysia
Chatchawan et al.	2017	Factors Affecting Innovative Work Behaviour of Employees	* Team Climate Inventory * Learning Orientation * Organisational Supportiveness * Transformation Leadership	Local administrative organisations (literature review & document analysis)	Thailand

Appendix 1: State of the arts about innovative work behaviour model (continued)

Authors	*Year*	*Model framework*	*Variables that influence IWB*	*Respondent*	*Negara*
Spanuth and Wald	2017	Innovative Work Behaviour: The Role of Affective and Performance-based Factors	* Temporary Organisations Commitment (Affective) * Temporary Organisations Proficiency (Performance-based)	583 TO professionals	Austria and Germany
Klaeijsen et al.	2018	Innovative Behaviour using Basic Psychological Need Satisfaction, Intrinsic Motivation and Occupational Self-Efficacy	* Basic Psychological Need Satisfaction * Intrinsic Motivation * Occupational Self-Efficacy	2385 teachers in primary, secondary and vocational education	Netherlands
Baharuddin et al.	2019	Innovative Work Behaviour using Job Autonomy & Job Commitment	* Job Autonomy * Job Commitment	School Teachers (Literature Review & Propose Framework)	Malaysia
Afsar and Umrani	2019	Transformational Leadership and Innovative work Behaviour: The Role of Motivation to Learn, Task Complexity and Innovation Climate	* Transformational Leadership * Motivation to Learn * Task Complexity * Innovation Climate	117 supervisors & 349 subordinates (employees)	Pakistan
Stoffers et al.	2019	The Mediating Role of Employability on Innovative Work Behaviour	* Employability * Leader-member Exchange * Organizational Citizenship Behaviours * Organisational Politics	487 pairs of employees and their immediate supervisors working in 151 SMEs	Limburg Province, the Netherlands
Kmieciak	2020	Innovative Work Behaviour using Trust & Knowledge Sharing	* Horizontal Trust * Vertical Trust * Knowledge Donating * Knowledge Collecting	252 employees	Poland
Knezović and Drkić	2020	The Role of Transformational Leadership OM Innovative Work Behaviour	* Transformational Leadership * Psychological Empowerment * Participation in the Decision-Making Process * Organisational Justice	371 employees from SMEs	Bosnia and Herzegovina

Appendix 1: State of the arts about innovative work behaviour model (continued)

Authors	*Year*	*Model framework*	*Variables that influence IWB*	*Respondent*	*Negara*
Coun et al.	2021	Innovative Work Behaviour using Leadership Style & Work-Related Flow in Times of Covid-19	* Work-Related Flow * Empowering Leadership Behaviour * Directive Leadership Behaviour	257 employees	Netherlands
Johari et al.	2021	Innovative Work Behaviour as Effects of Teamwork, Principal Support and Humour	* Teamwork * Principal Support * Humour	354 school teachers	Malaysia
Phuong et al.	2021	Supportive Work Environment and Innovative Work Behaviour: The Mediating Role of Informal Learning	* Informal Learning * Co-worker Support * Supervisor Support	471 teachers from general public schools	Vietnam
Zhang et al.	2021	External Antecedents of Innovative Work Behaviour with Theory of Planned Behaviour (TPB)	* Innovative Intention * Innovative Attitude * Subjective Norm * Perceived Behavioural Control	practitioners in 152 technology-based enterprises	China
You et al.	2022	The Effect of Organisational Innovation Climate on Innovative Behaviour: The Role of Psychological Ownership and Task Interdependence	* Psychological Ownership * Organisational Innovation Climate * Task Interdependence	326 employees and their direct supervisors from 13 enterprises	Guangdong Province, China
Gkontelos et al.	2023	Innovative Work Behaviour as a Function of Self-Efficacy, Burnout and Irrational Beliefs	* Self-Efficacy * Irrational Beliefs * Burnout	964 in-service teachers in primary education	Greece

Appendix 2: Measurement scale construct with items in English translation

	Construct and associated items
1	*Innovative work behaviour*
	IG1 I come up with new ideas to address problems in teaching.
	IG2 I invent or modify teaching methods and teaching aids in teaching.
	IG3 I find relatively different solutions to solve teaching problems.
	IP1 I can convince stakeholders to support the development of my innovative ideas in teaching.
	IP2 I have successfully obtained approval from the authorities to develop innovative ideas in teaching.
	IP3 The school principal is enthusiastic about my innovative ideas.
	IR1 I implement my innovative ideas in activities that are beneficial in teaching.
	IR2 I introduce my innovative ideas systematically to students or their parents.
	IR3 I evaluate the use of innovative ideas that I have implemented in teaching.
2	*Innovative intention*
	IB1 I want to find more effective teaching methods.
	IB2 I am motivated to develop new concrete ideas in teaching.
	IB3 I want to find new ideas as solutions to problems in teaching.
	IB4 I am willing to develop my creativity in the teaching process in the classroom.
	IB5 I intend to develop innovative methods or teaching aids that have a positive impact on teaching.
	IB6 I enjoy sharing and discussing innovative ideas with school leaders and colleagues.

Appendix 2: Measurement scale construct with items in English translation (continued)

	Construct and associated items
3	*Attitude toward innovation*
	SI1 I support creativity in teaching.
	SI2 I actively look for creative ideas in teaching.
	SI4 I want to be involved in innovative activities in teaching.
	RT1 I like to try new things in teaching.
	RT2 I support creative activities in teaching, even though there is a possibility of risk.
	RT3 I am willing to invest time and energy for teaching innovation, even though success is not guaranteed.
	RT4 Developing new teaching methods or teaching aids is a challenge that excites me.
	RT5 It is better for me to take creative action, even though it may not be successful, than to use old methods that are ineffective.
	OE1 I am open to new information to developing innovative ideas in teaching.
	OE2 Knowledge or information from other schools is valuable for developing innovation in teaching at this school.
	OE3 Input from students or parents contributes to efforts to innovate in teaching.
	OE4 My creative ideas can develop by learning from the successes or failures of other schools.
4	*Subjective norm for innovation*
	FE1 My family members think I am a creative teacher.
	FE2 My family members think that creativity is important for my profession as a teacher.
	FE3 My family members expect me to be a creative teacher.
	FE4 My family members might be disappointed if I am not creative.
	LE1 My superiors at school think I am a creative teacher.
	LE2 My superiors at school think that creativity is important for my profession as a teacher.
	LE3 My superiors at school expect me to be a creative teacher.

Appendix 2: Measurement scale construct with items in English translation (continued)

	Construct and associated items
	LE4 My superiors at school might be disappointed if I am not creative.
	LE5 My superiors would be proud if I became a creative teacher.
	CST1 Students and/or parents think I am a creative teacher.
	CST2 My superiors at school think that creativity is important for my profession as a teacher.
	CST3 Students and/or parents expect me to be a creative teacher.
	CST4 Students and/or parents might be disappointed if I am not creative.
5	*Innovation efficacy*
	PA1 I am brave enough to express or convey my ideas at school.
	PA2 I consider myself an innovative teacher.
	PA3 I have good self-confidence.
	PA4 I am confident in solving teaching problems, including when facing students or parents.
	PA5 I am confident that I can overcome unexpected events in teaching.
	EBA1 I am a creative person.
	EBA2 I can propose 'out-of-the-box' or creative solutions.
	EBA3 I can solve teaching problems efficiently and effectively, even complex problems.
	EBA4 My creative potential is reliable.
	EBA5 I can develop creative ideas for various teaching problems.
	EBA6 I have more creative ideas than other teachers.
	EBA7 When I am faced with a problem, I can find several alternative solutions.
	EBA8 I can find at least one solution when facing a difficult situation.

Appendix 2: Measurement scale construct with items in English translation (continued)

	Construct and associated items
6	*Learning orientation culture*
	CL1 The principal agrees that the ability of teachers and educational staff to learn and develop is the key to this school's competitive advantage.
	CL2 Learning (self-development) is considered important for the improvement or enhancement of the quality of our school.
	CL3 Learning (development) of teachers and educational staff is considered a valuable investment, not a cost that is detrimental, in our school.
	CL4 Learning or development in teachers and educational staff is the main capital for ensuring the sustainability of our school.
	CL5 Our school provides enough opportunities for teachers and educational staff to continue learning (self-developing).
	CL6 Our school gives teachers and educational staff the opportunity to apply the results of their learning/training.
	SV1 There is a clear shared goal (vision) in our school.
	SV2 The school vision is accepted and implemented wholeheartedly by all teachers and education staff, not just as a formality.
	SV3 All teachers and education staff are committed to achieving the school's vision.
	SV4 Every teacher and education staff is willing to develop themselves to contribute to the achievement of our school's vision.
	OM1 We dare to criticize wisely about our school's mistaken perspective in treating students or parents.
	OM2 The leaders, teachers and education staff at our school are aware that services to students must be continuously evaluated.
	OM3 We regularly evaluate policies and activities at the school.
	OM4 Our school is open to ideas presented by teachers and education staff.
	OM5 Teachers and education personnel who express their thoughts in our school will not be reprimanded or embarrassed.
	ITG1 In meetings or discussions, we often raise learning insights from the successes and failures of our school in the past.
	ITG2 We always share the results of the evaluation of failures in this school with all teachers and education staff, so that they will not be repeated.
	ITG3 We have a systematic way or activity to share learning insights from our successes and failures with other units/departments.
	ITG4 School leaders often emphasize the importance of sharing knowledge and learning insights with other teachers and education staff at our school.
	ITG5 We share success strategies between units and between teachers/education staff, so that we can learn from each other.

Appendix 2: Measurement scale construct with items in English translation (continued)

	Construct and associated items
7	*Self-determination*
	IM1 I work as a teacher because this job is enjoyable.
	IM2 I work as a teacher because the tasks are interesting to do.
	IM3 I carry out my duties as a teacher because I enjoy them.
	IRG1 I work as a teacher because this profession is important.
	IRG2 I work as a teacher because this profession has a positive impact.
	IRG3 I carry out my duties as a teacher because it is important for the success of the students.