Interdisciplinary Journal of Management Studies (IJMS)
Home Page: https://ijms.ut.ac.ir
Online ISSN: 2981-0795

The University of Tehran Press

Empirical Evidence: Comparing Innovation, Knowledge Sharing Behavior, Islamic Work Ethic and Entrepreneurial Orientation Between More Innovative and Less Innovative Public Sector Agent

Muliati Usman[1*] | Syafruddin Chan[2] | Sorayanti Utami[3] | Hamdi Harmen[4] | Fadhilah[5]

1. Corresponding Author, Department of Management, Faculty of Economics and Business, Syiah Kuala University, Darussalam, Banda Aceh, Indonesia. E-mail: muliatiusman@usk.ac.id
2. Department of Management, Faculty of Economics and Business, Syiah Kuala University, Darussalam, Banda Aceh, Indonesia. E-mail: syafruddin.chan@usk.ac.id
3. Department of Management, Faculty of Economics and Business, Syiah Kuala University, Darussalam, Banda Aceh, Indonesia. E-mail: sorayantiutami@usk.ac.id
4. Department of Management, Faculty of Economics and Business, Syiah Kuala University, Darussalam, Banda Aceh, Indonesia. E-mail: hamdi_harmen@usk.ac.id
5. Department of Family Welfare Education, Faculty of Teacher Training and Education, Syiah Kuala University, Darussalam, Banda Aceh, Indonesia. E-mail: fadhilah@usk.ac.id

ARTICLE INFO

Article type:
Research Article

Article History:
Received 11 June 2022
Revised 21 November 2023
Accepted 12 December 2023
Published Online 12 June 2024

Keywords:
Innovation,
Knowledge Sharing,
Islamic Work Ethic,
Entrepreneurial Orientation,
Public Sector.

ABSTRACT

This study attempts to compare innovative and less innovative agencies on innovative behavior, knowledge sharing behavior, Islamic work ethic and entrepreneurial orientation. Subsequently, data processing for the study adopts the use of the Dependent Sample T-test, known as the Paired T-test. Results of the study proved that there are significant differences between the public sector in terms of innovative behavior, Islamic work ethic, and its dimensions, i.e., effort, cooperation, and moral responsibility. There is also a significant difference between more innovative and less innovative agencies in terms of entrepreneurial orientation and its dimensions, i.e., innovativeness and proactiveness. Nevertheless, there is no significant difference between more innovative agencies and less innovative agencies in terms of knowledge-sharing behavior and its dimensions, i.e., knowledge donating and knowledge collecting. Likewise, one of the dimensions of entrepreneurial orientation, i.e. risk taking, has no significant difference between more innovative and less innovative agencies. Importantly, research findings provide a guideline for the government to find the solution of problem innovation in the public sector to improve service to society. Specifically, management support is very important in order to build a culture for knowledge sharing and a strong awareness among civil servants of the value of Islamic work ethic. Managers are expected to be first in implementing entrepreneurial orientation. Subsequently, this empirical study is the first that examines the comparison between innovation, knowledge-sharing behavior, Islamic work ethics, and entrepreneurial orientation in public sector knowledge-sharing behavior, Islamic work ethics, and entrepreneurial orientation in the public sector, which is more innovative and less innovative.

Cite this article: Usman, M.; Chan, S.; Utami, S.; Harmen, H. & Fadhilah (2024). Empirical Evidence: Comparing Innovation, Knowledge Sharing Behavior, Islamic Work Ethic and Entrepreneurial Orientation Between More Innovative and Less Innovative Public Sector Agent. *Interdisciplinary Journal of Management Studies* (*IJMS*), 17 (3), 855-873. DOI: http//doi.org/10.22059/IJMS.2023.344245.675155

Publisher: University of Tehran Press.
DOI: http//doi.org/10.22059/IJMS.2023.344245.675155

1. Introduction

At the beginning of the 21st century, the public sector in most parts of the world faced problems handling public service delivery. It is a fact that the public sector, in terms of service, cannot be equated with the private sector (Kamarck, 2004). In some senses, innovation in the public sector is identic with problems of "quality" government. However, for many reformers, there is a more specific agenda of innovation in government. It endeavors delivery to increase service delivery, which is certainly very important in an effort to build support and restore public trust in the government (Kamarck, 2004). As claimed by several scholars (i.e., Moore, 2005; Moore & Hartley, 2008; Cankar & Petkovsek, 2013; Mulgan, 2014; Lekhi, 2007; Robertson & Ball, 2002), innovation in the public sector is a key means for the government to improve the quality of public service delivery and performance. Then, **successful successful innovation is considered a reliable strategy** to address issues in public services. If there is no innovation, organizations will depend on the conventional system to conduct business. Organizations must be able to distinguish identify innovative processes and products in an uncertain environments for future organizational **performance (Tajeddini & Trueman, 2016).** Innovation in the private sector is seen as a means to ensure competitiveness in the market or revive a market that tends to decline or become sluggish. Meanwhile, in the public sector, innovation is used to improve the quality or efficiency of public services in line with government objectives (Lee, Lee, & Pennings, 2001; Hartley, 2005).

Thus, public sector innovation is important as citizens' satisfaction has been used to measure public service delivery. Though there are **some ongoing challenges from hostile environment** that make innovations difficult to achieve **for improving performance,** such as financial pressure, bureaucratic controls, and increasing demand from the citizens for better services, innovation is nonetheless important in the public sector since it is a useful way to satisfy citizens by responding to their requests. Therefore, organizations must have a high ability to innovate, as this would be useful for supporting new ideas and processes (Maatoofi & Tajeddini, 2011; **Tajeddini & Trueman, 2016).** In addition, in the absence of a strong process of innovation, new concepts cannot be addressed by the management, thus leaving the organization in a disadvantaged position (Ross, 2015).

However, innovation in the public sector requires imagination and courage. This is certainly contrary to the private sector, where employees receive financial rewards and a larger market share when producing innovation. Therefore, people in the private sector tend to respect and promote innovation, as it is considered an investment. This situation does not occur in the public sector. Successful innovation will add financial value to the state, but not for individuals who produce innovation. In addition, the public sector is indeed a provider of monopoly services and goods. Employees in the public sector have little incentive to invest in innovation (Kamarck, 2004). Public sectors around the world face pressure in implementing innovation due to issue such as bureaucracy which hampered various innovation. On the other hand, the business sector continues to grow with new innovations (Mulgan, 2014). Thus, culture is the main barrier to innovative behavior in the public sector (Hormiga, Hancock, & Valls-Pasola, 2013). It is noted that culture in the public sector influences individual characteristics in innovation. Parker and Bradley (2000) claimed that the public sector needs to depart from traditional bureaucracy by adopting greater concern on change, flexibility, outcomes, entrepreneurialism, efficiency, and productivity. However, it is fact that public sector organizations continue to value bureaucratic or hierarchical culture.

Potts and Kastelle (2010) asserted that even though public sector innovation cannot be easily institutionalized or planned, there are many ways that the government can take advantage of the opportunities for new ideas. **To improve performance, the Public sector needs to generate specific strategies to overcome problems of innovation that are integrated and aligned with the critical resource of the** organization **(Tajeddini & Trueman, 2016;** Agolla & Van Lill, 2013; Karyotakis & Moustakis, 2016). Innovation in the public sector also leads to open government, however, there is still no integrated framework for understanding and determining innovation in this context (Koch, Cunningham, Schwabsky, & Hauknes, 2006). The public sector needs a specific framework and indicator in the context of innovation. An integrative approach is appropriate for addressing innovation. Additionally, further development can be addressed more specifically (Bloch & Bugge, 2013).

At the same time, many researchers claimed that **critical resource,** such as individual characters or personal attitude, determines the success of innovation in the public sector (e.g. Park & Jo, 2017; Janssen & Moors, 2013; **Tajeddini, 2016; Tajdini & Tajeddini, 2018).** It is clear, innovative behavior is generated by individual characteristics or actions through specific behavior (Scott & Bruce, 1994). Further, Senge (1990) and Demircioglu & Audretsch (2017), asserted that unwillingness to empower individual will causes failure in carrying out innovation in the public sector. Thus, it is not surprising when empirical studies found that continuous improvement of innovation are developed by actions of the individual (De Jong & Den Hartog, 2010), specific behavior such as knowledge sharing behavior (Hussain, Konar, & Ali, 2016; Yeşil and Hırlak, 2013; Hu *et al.*, 2009; Yu *et al.*, 2013; Lee & Hong, 2014; **Tajdini & Tajeddini, 2018),** Islamic work ethic (Kumar & Rose, 2010; Abbasi, Mir, & Hussain, 2012; Awan & Akram, 2012) and entrepreneurial orientation (Rattanawong & Suwanno, 2014; Omerzel, 2016; Čivre & Gomezelj Omerzel, 2015). These specific behaviors are critical resources that positively influence innovation.

Critical resources such as individual characteristic/attitudes and behavior can be integrated as strategies for change in the public sector in order to accelerate innovation (Karyotakis & Moustakis, 2016). Therefore, there is a need to investigate and understand who among individuals in the workforce has a high propensity on innovative behavior, knowledge sharing behavior, Islamic work ethic has a high propensity for innovative behavior, knowledge-sharing behavior, Islamic work ethic, and entrepreneurial orientation. However, there is an absence understanding of the significant difference between these aspects between the more innovative and less innovative public sectors. This study has not found an empirical study that attempts to investigate this relationship. Thus, this study triggers the call to recognize how and why the public sector needs to exploit individual characteristics with these aspects to enhance innovation. Hence, this study is one of the first that investigates the significant difference behavior behavior in innovative behavior, knowledge-sharing behavior, and entrepreneurial orientation between these agencies.

2. Review of Literature

2.1. The Importance of Innovation in the Public Sector

Since public sectors are required to provide the best service, innovation is considered a reliable strategy for facing various changes. The public sector must improve its quality of service delivery through various innovations. However, there are some problems faced by the government that cause service from the public sector to be unsatisfactory in meeting public expectations compared to the private sector, such lack of investment in training employees, lack of funds to train their workforce, salary problems that have caused many talented or skilled executives to switch from the public sector to the private sector, civil servants being strongly bound by regulations, influencing the political attractiveness that limits salaries, and many civil servants not complying with the rule of law. This situation is exacerbated by the long tradition of service lines (Kamarck, 2004). However, it seems that the influence of the **environment** has boosted the public sector to react in anticipating the problem of public service delivery through **innovation strategy (Tajeddini & Trueman, 2016)**.

Indeed, more innovative agencies are actively involved in continuous improvement and or significant change compared to less innovative agencies. For example, they are not just fixated on routine. They apply some methods to make various changes in order to be closer to society. These agencies attempt to promote and introduce improvement or programs by using events, competitions, banners, magazines, television, brochures, seminars, talks, lectures, and others. It appears that these agencies realize the importance of citizen involvement for the successful process of change as suggested in the regulation of the Ministry of Administrative and Bureaucratic Reform of Republic Indonesia No. 15 in 2015.

It is mandatory to encourage society's involvement in creating public service innovation. This is consistent with previous researchers regarding innovation in the public sector such as Kamarck (2004), Kohli and Mulgan (2010), McFarlene (2007), and Lekhi (2007). They argued that collaborating with outside parties or external environments will facilitate the solving of problems in the public sector. Comprehensive government quality for change cannot be implemented realistically without society participation. Therefore, it is very dependent on input from citizens. Involving public forums and exchanging ideas and views for the process of change produces more outcomes for

innovation. The rationale is that engaging citizen is one of the strategies in accelerating innovation in the public sector. By using this method, society perceived that they get more service and attention from the government. They know and understand that there are various services that have been prepared in facilitating and helping society. Instead, citizens, together with the private sector, politician, academician and etc. will provide feedback to the government for the improvement of innovation (Kohli & Mulgan, 2010).

On the contrary, less innovative agencies tend to be more rigid or static. They are engaged in old tradition, or quite resistance to change since it is a characteristic of public sector organizations. As claimed by many researchers (e.g. Parker & Bradley, 2000; Vigoda-Gadot, Shoham, Schwabsky, & Ruvio, 2005, 2008; Kamarck, 2004; Borins, 2001b; Mulgan & Albury, 2003; Kim & Yoon, 2015) organizational culture in the public sector is not dominated by flexibility and orientation towards change. A culture of bureaucracy is strictly enforced. Thus, these organizations solely focus on routines. It appears that the organization perceive that there is absolutely no need for change or improvement in service since the government has prepared all regulations and procedures to facilitate work in the public sector. Thus, they tend to be close to various changes or improvements for innovation. These organizations are less responsive to public contributions because it compromises their comfort zone.

2.2. The Importance of Knowledge Sharing Behavior in the Public Sector

There are several previous studies showing that knowledge sharing behavior in the public sector is more difficult to run smoothly than in the private sector. According to Titi Amayah (2013), there is already a perception that the public sector is an environment that is not conducive to knowledge sharing. Employees in the public sector have lower motivation than employees in the private sector. A previous study by Marouf (2015), Sveiby and Simons (2002) indicated that respondents in the private sector have more positive perceptions of knowledge sharing than respondents in public sector. Marouf (2015) claimed that this is due to the private sectors' tendency to have a competitive advantage, making it more relevant to knowledge sharing. There is a perception that knowledge is the main resource. Therefore, employees tend to embrace knowledge sharing in order to get a competitive edge.

The public sector is a bureaucratic organization that is identified with a lack of dynamism. It can be a barrier to engaging in knowledge sharing behavior and is not an easy task. Employees or individuals in the public sector are low in motivation to share their knowledge as it will not have a positive influence on their career or income. Otherwise, it is presumed that when individuals perform knowledge sharing behavior, they face syndrome power (Titi Amayah, 2013). Expertise possessed by professionals is very important in the dissemination of knowledge. In fact, not all experts are willing to share their knowledge. It can be used to show their influence on the organization so that they retain their knowledge from others. Therefore, sharing knowledge is more challenging, as many experts perceive that knowledge is power (Rusly, Yih-Tong, & L. Corner, 2014).

As stated by Kim and Lee (2006), in terms of organizational context, public sector organization differs from the private sector organization. This organization deals with more constraints in developing knowledge sharing among its organization members. Therefore, it is important to overcome the barriers so they can improve their employees' knowledge. However, the public sector has an important role in development and stipulating of knowledge service, due to knowledge being the center resource from government service. When knowledge sharing behavior among individuals can run effectively, it is significant for providing adequate governance service (Sandhu, Jain, & Kalthom, 2011).

Knowledge sharing and its dimensions, i.e. knowledge donating and knowledge collecting, also have different effects. Sandhu *et al.* (2011) found in his study that when looking at the perceptions of knowledge donating and knowledge collecting, employees in the public sector exhibit a biased effect. Almost all employees are very positive when asked about their willingness to share knowledge (knowledge donating). However, it is interesting to highlight when employees are asked about their colleague's willingness to share knowledge (knowledge collecting). They feel that their colleagues are less willing to share their knowledge. Similarly, Wei Chong, Yen Yuen, and Chew Gan (2014) studied the knowledge sharing of academic staff in public and private universities in Malaysia. They found that academic staff in public universities are quite reluctant to share knowledge or knowledge. There is a significant difference between academic staff of public and private universities in terms of

knowledge receiving due to the fear of misuse of information. This is also related to intellectual property rights. In addition, the lack of interaction between the knowledge receiver and knowledge donor is an obstacle in the practice of knowledge-sharing behavior in public universities. It is very important to develop clear and open communication in order to build a trusting relationship that affects the sense of security in sharing knowledge with others. Therefore, Marouf (2016) claimed that knowledge sharing culture tends to an environment of trust and openness by the individual.

Sandhu *et al.* (2011) asserted that trust is very important both between colleagues, staff, and managers. However, trust is vulnerable. Managers need to behave in ways that enhance trustworthiness, and that support the creation of a good working relationship between team members. However, there were inconsistencies when referring to the findings by some researchers e.g. Sandhu *et al.* (2011), Hussein *et al.* (2016). They found that respondents in the public sector have a positive view on the importance of knowledge sharing. Employees assume that knowledge is very important in the public sector. In fact, they also recognize that knowledge sharing can enhance competitive advantage. Similarly, work by Vong, Zo, and Ciganek (2014) found that knowledge sharing significantly contributes to the performance of the public sector in Cambodia. Meanwhile, Kumar and Rose (2012) also found that knowledge sharing has a significant effect on innovation in the public sector. Therefore, Liebowitz (2002) asserted that, in order to anticipate today's rapid changes, the public sector needs to focus on knowledge of their human capital and innovate, as their success depends on the development of knowledge and innovative efforts.

2.3. The Importance of Islamic Work Ethic in the Public Sector

It is important that the value of Islamic work ethic is implemented by civil servants in the public sector. Islamic work ethic is multidimensional in nature, which is related to various aspects of life such as social, political, and economic. Islamic work ethic is more than hard work, but also involves worship to get the pleasure of the creator. So, Islamic work ethics contains the concept of material benefits and spiritual concepts (Ahmad & Owoyemi, 2012). As stated by Kumar and Rose (2010; 2012), by implementing these values, Muslims will work more sincerely and be motivated to work responsibly.

Islamic work ethic contains positive values sourced from the Qur'an and Hadith. According to Yaseen, Dajani, and Mazen (2015) the values of Islamic work ethic contains perceived worship, effort, cooperation, and moral responsibility. Meanwhile, Wahab, Quazi, and Blackman (2016) proposed a comprehensive value of Islamic work ethic according to the Al-Qur'an (see Table 1).

Table 1. Al-Qur'an Reference of Value Islamic Work Ethic

Constructs	**Sources in Qur'an Verses**
Cleanliness	Al-Baqarah (2), verse 222
Piety	Al-Hujurat (49), verse 13
Benevolence	Al-Nahl (16), verse 90
Cooperation	Al-Maidah (5), verse 2; Al-Nisa (4), verse 85
Consistency	Al-Shura (42), verse 15
Consultation	Al-Shura (42) verse 38, Al-Qasas (28), verse 26-28
Equality	Al-Nisa (4), verse 58
Forgiveness	Al-Shura (42), verse 43
Gratitude	Al-Nahl (16), verse 114; Yunus (6), verse 17
Justice	Al-Hujurat (49), verse 9
Moderation	Al-Baqarah (2), verse 143
Patience	Al-Baqarah (2), verse 153;Hud (11), verse 11, 15
Transparency	Al-Baqarah (2), verse 282
Trustworthiness	Al-Baqarah (2), verse 188
Strength	Al-Qasas (28), verse 26
Moderation	Al-Furqan (25), verse 67
Competence/capability	Al-Baqarah (2), verse 286
Humble	Hud (11), verse 23; Al-An'am (6), verse 152; Al-Muntahina (60), verse 8
Fairness	Al-Najm (53), verse 32
Responsibility	Al-Nisa (4), verse 58-59
Hard work	Al-Baqarah (2), verse 62, 82; Al-An'am (6), verse 135 Al-Baqarah (92), verse 25, 225, 62; Al-Taubah (9), verse 105
Right Intention	As-Saff (61), verse 8
Truth	Al-Anfal (7), verse 27; Yunus (10), verse 61; Al-Nur (24), verse 8

Several past studies revealed advantages from the value of Islamic work ethic. For example, it was revealed that Islamic work ethic has a positive impact on organizational commitment and job satisfaction (Yaseen *et al.,* 2015; Khan, Abbas, Gul & Raja, 2013; Yousef, 2001; Batool, Gul, & Shahzad, 2013; Rokhman, 2010; Hayati & Caniago, 2012), organizational justice (Rokhman & Hassan, 2012), turnover intention (Rokhman, 2010), and attitude towards change (Yousef, 2000). Although there are still very few studies that examine the influence of Islamic work ethic in the public sector, some researchers found that it enhances innovation (Farrukh, Butt, & Mansori, 2015; Awan & Akram, 2012; Kumar & Rose, 2010; 2012; Abbasi *et al.,* 2012), turnover intention (Sadozai *et al.* 2013), organizational citizenship behavior (Murtaza, Abbas, Raja, Roques, Khalid, & Mushtaq, 2014) and other positive impacts. Indeed, as stated by Aldulaimi (2016), it is necessary to instill awareness from individuals on the importance of Islamic values work ethic to serve society. Therefore, Yaseen *et al.* (2015) asserted that Muslims are required to work sincerely, strive to the maximum, and prioritize teamwork and shared interests above everything else. They have a moral responsibility in doing their work, both for themselves and the community.

Thus, it is expected that each individual is aware that the values of Islamic work ethic will benefit themselves and society, in the delivery of services by the public sector. Thus, culture and environment do not prevent civil servants from engaging in values and principles of Islamic work ethic. By implementing Islamic work ethic, civil servants in the public sector serve society better.

2.4. The Importance of Entrepreneurial Orientation in the Public Sector

Entrepreneurial orientation supports the public sector in disadvantaged and unfavorable environments (Khanagha, Dehkordi, Zali, & Hejazi, 2017). According to Wiklund and Shepherd (2005), high entrepreneurial orientation will provide with the ability to discover new opportunities that can differentiate them from others. Many studies have revealed the strong effect of entrepreneurial on innovation (e.g., Miller & French, 2016; Monteagudo & Martínez, 2015; Omerzel, 2016; Nybakk & Hansen, 2008; Čivre & Gomezelj Omerzel, 2015; Janssen & Moors, 2013; Wynen, Verhoest, Ongaro, & Van Thiel, 2013). Also, in the context of the public sector, some empirical studies have revealed that entrepreneurial orientation has a positive relationship with innovation. Miller and French (2016) found evidence that entrepreneurial orientation supports organizations in achieving their missions through innovation, such as in the Public Sector Hospital in Canada. Similarly, a study by Janssen and Moors (2013) found that entrepreneurial orientation influences sustainable innovation in the Healthcare System in The Netherlands. Further, Park and Jo (2017) revealed that entrepreneurial orientation positively influences innovative behavior through its dimension, i.e., proactiveness. They found that entrepreneurial orientation as an independent variable is a very important and influential factor in triggering innovation.

Specifically, Bedoya, Alzate, & Giraldo (2018) asserted that the concept of entrepreneurial orientation is integrated and combined in behavior as a whole. Entrepreneurial orientation has components or dimensions that are interrelated with each other. When one dimension of entrepreneurial orientation is not established, it will not shape organizations to become entrepreneurial. Yet, some past studies found inconsistent influences of EO dimensions with innovation. There are some researches which revealed that dimensions of entrepreneurial orientation do not have a positive impact on innovation (e.g. Wang & Juan, 2015; Nasution, Mavondo, Matanda, & Ndubisi, 2011; Park & Jo, 2017; Giebels, de Reuver, Rispens, & Ufkes, 2016; Torugsa & Arundel, 2017). For example, a study by Wang and Juan (2015) found that two dimensions of entrepreneurial orientation, i.e risk-taking and proactiveness, are a significant predictor of innovation performance. Contrarily, another dimension, i.e. autonomy, has no significant impact on innovative performance. Meanwhile, other researchers found that dimensions of entrepreneurial orientation can influence innovation as a whole (e.g. Liu & Lee, 2018; Rattanawong & Suwanno, 2014; Urban & Streak, 2013). Thus, different types of entrepreneurial orientation may impact innovation differently (Wang & Juan, 2016). The study indicated that there is an unclear issue of how these dimensions may influence innovation. Further research is needed for a deeper understanding on the effect of dimension on entrepreneurial orientation.

Thus, Wang and Juan (2016) claimed that entrepreneurially oriented individuals can enhance performance. Indeed, public sector workers with entrepreneurial orientation will be more successful

in achieving their goals. Thus, entrepreneurial orientation, through its characteristics i.e. innovativeness, proactiveness and risk taking, is important in the public sector because it will influence strategic decision-making in uncertain situations (Franco & Haase, 2013). Roberts (1992) asserted that implementing behavior within an entrepreneurial orientation will support civil servants to create more innovative ideas.

3. Research Methodology

3.1. Research Sample

The target population of this study is managerial staff from 8 selected agencies in Province Aceh, Indonesia. These agencies provide services for areas in need. Thus, 214 managers from 8 agencies of all levels are the respondents for the study. A total of 192 questionnaires were distributed and 152 questionnaires were returned. Lastly, there were 124 questionnaires used for further analysis. Subsequently, in order to answer research questions, public sectors are categorized into more innovative or less innovative based on four indicators as stipulated in Table 2.

In this term, there are criteria for innovation in the public sector proposed by The Ministry of Administration and Bureaucratic Reform of Republic Indonesia No. 15 in 2015. **First**, there must be an improvement in providing services to society. For example, a. introducing new approaches/unique ideas for solving problems, policies, implementation design or modification of existing innovation, b. efficiency of process and procedure and reducing complexity of bureaucracy, c. actively develop feedback from society, d. justice and simplicity services, and e. fostering partnership with external environments i.e., society and private sector). **Second**, society's participation/involvement must be strengthened. For example, a. introducing a new approach to strengthening society participation, b. pushing society involvement and openness through an innovative mechanism, and c. encouraging public participation. Thus, there is a mechanism for public openness. **Third,** it encourages a government-based collaborative approach in the information era. For example, a. developing new approaches based on collaboration, b. the integration of public service systems by information technology and communication such as e-government, c. developing effective service by using information exchange, and d. fostering collaboration between the public sector and society. **Fourth**, encouraging gender responsiveness in service delivery. For example, a. introducing new approaches to support gender responsive in service for women's specific needs, b. improving service related to gender responsiveness.

Data for these agencies were obtained from both primary and secondary sources. For primary sources, data was taken from interviews regarding four indicators mentioned previously. Meanwhile, secondary sources of data were obtained from government reports, agency websites, newspapers, magazines, bulletins, pamphlets, etc. Based on the results from the interviews, the level of innovation adoption by agencies can be identified. Thus, the results can assess the extent to which their organization meets the established criteria for innovative agency. Additionally, the results of the interview are supported by information from the websites of each agency, reports, media and others. This study also endeavors to observe the efforts of these agencies in innovation activities. Therefore, this study attempts to assess the difference between more innovative and less innovative agencies in the public sector by applying four indicators along with the 14 criteria based on the Regulation of The Ministry of Administration and Bureaucratic Reform of Republic Indonesia No. 15 in 2015.

Assessment of Table 2 is a modification of the study by Subramanian and Nilakanta (1996) and the Ministry of State Apparatus Empowerment No. KEP/25/M.PAN/2/2004 in 2004. Scores of Yes and No was transferred into a numeric value i.e Yes = 1, and No = 0. Total number of criteria to measure innovation is 14. Therefore, the weight of score was divided by 14 or (1/14) that is 0.71. Subsequently, the score was calculated by multiplying the sum score and the weight of score i.e. 0.71**.** For example, from 14 criteria, one agency fulfilled 11 criteria. Thus, the total score of 11 was multiplied by 0.71 (11 x 0.71= 0.78). The score was converted into interval scale in order to distinguish between more innovative and less innovative agencies/public sectors as shown in Table 3.

Table 2. Indicators of Innovative and Less Innovative Agencies/Public Sectors

No.	Indicator	Service/ Mechanism Offered
I.	Improvement in Service	
	1. New approach to improve service	Yes/No
	2. Efficiency of process/procedure and bureaucracy	Yes/No
	3. Actively asking feedback of society	Yes/No
	4. Justice and simplicity for service	Yes/No
	5. Developing partnership with society and private sector	
II.	Society Involvement/Openness	
	6. New approach to strengthening society participation	Yes/No
	7. Pushing society involvement in creating service innovation	Yes/No
	8. Providing speed response of society input	Yes/No
III.	Collaborative Approach in Era of Information	
	New approach based on collaborative approach	Yes/No
	Service by technology of information and communication	Yes/No
	Effective service through information exchange	Yes/No
	Collaboration between public sector and society	Yes/No
IV.	Gender Responsive in Service	
	New approach to push gender responsive in service	Yes/No
	Improving service of gender responsive	Yes/No

Note: Score for response: Yes = 1, No = 0

Table 3. Level of Response

Range of Score	Level of Score	Type of Agency
< 0.6	Poor	Less Innovative
0.6 to < 0.7	Enough	Less Innovative
0.7 to < 0.8	Good	More Innovative
0.8 to < 0.9	Very Good	More Innovative
≥ 0.9	Excellent	More Innovative

This study found that there are 5 agencies categorized as more innovative and 3 agencies as less innovative following the four indicators by The Ministry of Administration and Bureaucratic Reform, Republic of Indonesia No. 15 in 2015. This study employs a questionnaire designed in an attractive format as a means of collecting data. The managerial staffs from eight public services in the Aceh Province were presented with the questionnaire, together with an enclosed letter describing the study and soliciting voluntary participation. To facilitate the respondents in answering the questionnaire, the questionnaire was designed using both English and Indonesian language. Data collection was conducted by visiting the agencies, where the managers were asked to voluntarily participate in the study. Two methods were used to collect the data: namely through self-administered questionnaires and through a contact person identified by the agency. Four agencies were involved in self-administered questionnaires and the other four agencies through a contact person.

3.2. Data Collection

The instrument was developed by referring to the literature and previous studies relevant to the context of this research. For the dependent variable (i.e. innovation), 9 items were used to measure the innovative behavior of individuals. These items were adopted from Janssen (2000). The knowledge sharing behavior instrument adopted fromVan Den Hoof and De Weenen (2004) comprises 3 items related to knowledge donating, and 4 items related to knowledge collecting. To measure Islamic work ethic, the instrument was adopted from the work of Yaseen *et al.* (2015). This instrument was measured by 4 items related to perceived worship, 5 items related to effort, 4 items related to cooperation, and 4 items related to moral responsibility. Entrepreneurial orientation was measured by using an instrument adopted from Meynhardt and Diefenbach (2012). This instrument was measured by 4 items related to innovativeness, 4 items related to proactiveness, and 5 items related to risk. All instruments were measured using a five-point likert-scale (1= strongly disagree, 5=strongly agree).

3.3. Data Processing

In this study, the data was processed using SPSS. A dependent sample t-test was used, also known as the paired t-test. This test was used because we have paired or related observations within the same group. Each observation in one group was paired or matched with a corresponding observation in the other group. **This test was particularly suitable for comparing the means of two measurements taken on the same subjects, as we had a group that was more innovative and a group that was less innovative.**

To conduct the dependent sample t-test, the following steps were involved:

1. Formulate the hypotheses:
    - Null hypothesis (H_0): There is no significant difference between the means of the paired observations.
    - Alternative hypothesis (H_1): There is a significant difference between the means of the paired observations

2. Collect paired data: Gather a sample of paired observations, where each observation in one group corresponds to a paired observation in the other group. For instance, we may have collected pre- and post-treatment measurements on the same individuals.

3. Calculate the differences: Determine the differences between the paired observations by subtracting the value in one group from the corresponding value in the other group. This results in a single difference value for each pair.

4. Conduct the T-test:
    - Compute the mean (average) of the differences.
    - Calculate the standard deviation of the differences.
    - Determine the standard error of the mean of the differences, which is the standard deviation divided by the square root of the sample size.
    - Calculate the t-value by dividing the mean of the differences by the standard error of the mean.
    - Determine the degrees of freedom, which is equal to the sample size minus 1.
    - Calculate the p-value using the t-distribution, the t-value, and the degrees of freedom obtained. The p-value represents the probability of observing a difference as extreme as the one observed, assuming the null hypothesis is true.

5. Interpret the results:
    - If the p-value is below the predetermined significance level (0.05), the null hypothesis is rejected. This suggests a significant difference between the means of the paired observations.
    - If the p-value is above the significance level, the null hypothesis is not rejected. It indicates that there is insufficient evidence to conclude a significant difference between the means of the paired observations.

By following these steps, we can analyze the paired data using the dependent sample t-test and draw conclusions about the presence or absence of a significant difference between the means of the paired observations.

4. Research Findings

4.1. Normality

The normality table provides information about the skewness and kurtosis of the observed indicators for each construct in the study. Skewness measures the degree of asymmetry in the distribution of the data, while kurtosis measures the extent of the tails or the presence of outliers in the distribution. In Table 4, the skewness and kurtosis statistics are presented along with their standard errors for each construct.

Skewness values quantify the departure from a symmetric distribution. Negative skewness indicates that the distribution is skewed to the left, while positive skewness indicates a skew to the right. For example, in the innovative behavior construct, the skewness statistic is -0.221 with a standard error of 0.214, suggesting a slight leftward skewness in the distribution of the indicators. Kurtosis measures the degree of peakedness or flatness in the distribution. Positive kurtosis indicates a

relatively more peaked or heavy-tailed distribution, while negative kurtosis suggests a flatter or light-tailed distribution. For instance, in the knowledge donating construct, the kurtosis statistic is 2.120 with a standard error of 0.433, indicating a distribution with relatively heavy tails or potential outliers.

These skewness and kurtosis statistics provide insights into the normality assumption of the data. Ideally, for a parametric analysis, the data should follow a normal distribution. Deviations from normality may impact the validity of certain statistical tests. Researchers often consider the magnitude of skewness and kurtosis, along with other factors, to assess the normality assumption and determine the appropriate analysis techniques or potential data transformations required.

Table 4. Normality Test (N=124)

Construct	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Innovative Behavior (IB)	-.221	.214	.677	.433
Knowledge Donating (KD)	-.875	.214	2.120	.433
Knowledge Sharing Behavior (KSB)	-.108	.214	.931	.433
Knowledge Collecting (KC)	-.872	.214	-.028	.433
Perceived Worship (PW)	-1.222	.214	.934	.433
Islamic Work Ethic (IWE)	-.125	.214	.937	.433
Effort (EF)	-.882	.214	-.159	.433
Cooperation (CP)	-.247	.214	-1.041	.433
Moral Responsibility (MR)	-.583	.214	-.793	.433
Entrepreneurial Orientation (EO)	.112	.214	.742	.433
Innovativeness (IVT)	-.233	.214	.959	.433
Proactiveness (PCT)	-.152	.214	-.118	.433
Risk Taking (RTK)	-.165	.214	-.187	.433

4.2. Convergent Validity

Convergent validity (Table 5 below) shows the average variance extracted (AVE) for each latent variable or construct. AVE is a measure of the amount of variance in the observed indicators that is captured by the underlying construct. In this table, the AVE values indicate the extent to which the indicators for each latent variable converge or align with the construct they are intended to measure. Higher AVE values (> 0,50) suggest stronger convergent validity, indicating that a larger proportion of the indicators' variance is attributable to the underlying construct.

Table 5. Average Variance Extracted (AVE)

Latent Variables (Constructs)	Average Variance Extracted (AVE)
Innovative Behavior (IB)	0.527
Knowledge Sharing Behavior (KSB)	0.589
Knowledge Donating (KD)	0.802
Knowledge Collecting (KC)	0.615
Islamic Work Ethic (IWE)	0.528
Perceived Worship (PW)	0.693
Effort (EF)	0.528
Cooperation (CP)	0.546
Moral Responsibility (MR)	0.565
Entepreneurial Orientation (EO)	0.539
Innovativeness (IVT)	0.641
Proactiveness (PCT)	0.596
Risk Taking (RTK)	0.579

Innovative Behavior (IB): The AVE value for the IB construct is 0.527, indicating that approximately 52.7% of the variance in the indicators for Innovative Behavior is explained by the construct itself. **Knowledge sharing behavior (KSB): The AVE value for KSB is 0.589 showing that around 58,9% of the variance in the indicators for knowledge sharing behavior can be accounted to the underlying construct.** Knowledge Donating (KD): The AVE value for KD is 0.802, suggesting that about 80.2% of the variance in the indicators for Knowledge donating is attributed to the underlying construct. Knowledge Collecting (KC): The AVE value for KC is 0.615, indicating that around 61.5% of the variance in the indicators for Knowledge collecting is accounted for by the construct. **Islamic work ethic (IWE): The AVE value for the IWE is 0.528, suggesting that**

approximately 52,8% of the variance is explained by the construct. Perceived Worship (PW): The AVE value for PW is 0.693, suggesting that approximately 69.3% of the variance in the indicators for PW can be attributed to the underlying construct. Effort (EF): The AVE value for EF is 0.528, indicating that around 52.8% of the variance in the indicators for Effort is explained by the construct. Cooperation (CP): The AVE value for Cooperation is 0.546, suggesting that approximately 54.6% of the variance in the indicators for Cooperation is accounted for by the construct. Moral Responsibility (MR): The AVE value for Moral Responsibility is 0.565, indicating that around 56.5% of the variance in the indicators for MR can be attributed to the underlying construct. Entrepreneurial orientation (EO): The AVE value for Entrepreneurial Orientation is 0.539, suggesting that approximately 53.9% of the variance in the indicators for EO is explained by the construct. **Innovativeness (IVT): The AVE value for IVT is 0.641 indicating that approximately 64,1% of the variance in the indicators for IVT can be explained by the construct. Proactiveness (PCT): The AVE value for PCT is 0.596 explaining that around 59,6% of the variance in the indicator for PCT can be accounted to the underlying construct. Risk Taking (RTK): The AVE value for RTK is 0.579 suggesting that approximately 57,9% of the variance in the indicator of RTK can be explained by the construct.**

The AVE values in the convergent validity table provide an indication of the convergent validity of the latent variables in the study. Higher AVE values suggest stronger convergent validity, indicating a greater alignment between the indicators and the underlying constructs they are intended to measure.

4.3. Reliability

Reliability (Table 6) provides information about the internal consistency of the constructs in the study, as measured by Cronbach's alpha and composite reliability. These measures assess the extent to which the items within each construct consistently measure the same underlying concept.

Table 6. Cronbach Alpha and Composite Reliability

Construct	Cronbach's Alpha	Composite Reliability
Innovative Behavior (IB)	0.830	0.869
Knowledge Sharing Behavior (KSB)	0.882	0.909
Knowledge Donating (KD)	0.873	0.924
Knowledge Collecting (KC)	0.792	0.865
Islamic Work Ethic (IWE)	0.915	0.926
Perceived Worship (PW)	0.853	0.930
Effort (EF)	0.777	0.848
Cooperation (CP)	0.733	0.827
Moral Responsibility (MR)	0.741	0.837
Entrepreneurial Orientation (EO)	0.816	0.855
Innovativeness (IVT)	0.806	0.875
Proactiveness (PCT)	0.750	0.848
Risk Taking (RTK)	0.759	0.628

In table 6, Cronbach's alpha and composite reliability values are reported for each construct. Cronbach's alpha is a commonly used measure of internal consistency reliability. It estimates the extent to which the items within a construct are correlated and measure the same underlying concept. For example, in the innovative behavior construct, Cronbach's alpha is 0.830, indicating a good level of internal consistency reliability. This means that the items measuring innovative behavior are consistently capturing the same construct.

Composite reliability is another measure of internal consistency reliability that considers the factor loadings of the items in addition to their correlations. It provides an alternative estimation of the reliability of the construct. For instance, in the knowledge donating construct, the composite reliability is 0.924, indicating a high level of internal consistency reliability. This suggests that the items assessing knowledge donating reliably measure the same construct.

Both Cronbach's alpha and composite reliability are widely used to assess the reliability of measurement scales. Higher values (>0,60) indicate better internal consistency reliability, suggesting that the items within each construct are measuring the intended concept consistently. Researchers

typically consider these reliability measures when evaluating the quality of their measurement instruments and the reliability of their constructs.

4.4. Dependent Sample T-Test

Table 7 below presents the findings of the dependent t-tests, which are specifically designed for comparing the means of two measurements conducted on the same subjects. In this study, the t-tests were used to assess the differences between the more innovative group and less innovative group.

Table 7. Result of Dependent Sample T-test (N=124)

Variable	Type of Agencies	Mean	t-Value	P Value
INV	More innovative	4.05	3.610	.000*
	Less innovative	3.78		
KSB	More innovative	4.43	1.645	.103
	Less innovative	4.29		
KD	More innovative	4.36	1.869	.064
	Less innovative	4.18		
KC	More innovative	4.48	1.208	.230
	Less innovative	4.37		
IWE	More innovative	4.64	2.844	.005*
	Less innovative	4.46		
PW	More innovative	4.75	1.260	.210
	Less innovative	4.65		
EF	More innovative	4.66	2.445	.016*
	Less innovative	4.48		
CP	More innovative	4.55	3.371	.001*
	Less innovative	4.29		
MR	More innovative	4.59	2.344	.021*
	Less innovative	4.40		
EO	More innovative	3.84	2.555	.012*
	Less innovative	3.67		
IVT	More innovative	4.04	2.251	.026*
	Less innovative	3.83		
PCT	More innovative	3.71	2.003	.047*
	Less innovative	3.52		
RTK	More innovative	3.79	1.689	.094
	Less innovative	3.67		

Note: * $p < 0.05$

INV = innovation, KSB= knowledge sharing behavior, KD = knowledge donating, KC = knowledge collecting, IWE= Islamic work ethic, PW = perceived worship, EF = effort, CP = cooperation, MR= moral responsibility, EO= entrepreneurial orientation, IVT = innovativeness, PCT= proactiveness, RTK= risk taking

The results relate to innovative behavior between more innovative and less innovative agencies ($t = 3.610$, $p < 0.05$). The results include the mean innovative behavior in more innovative agencies and less innovative agencies (innovative agencies M = 4.05 and less innovative agencies M= 3.78). This study does not find any significant difference in knowledge-sharing behavior, knowledge donating, and knowledge collecting between more innovative and less innovative agencies. Their respective values are: knowledge sharing behavior $t = 1.645$, $p > 0.05$, knowledge donating $t = 1.869$, $p > 0.05$, and knowledge collecting $t = 1.208$, $p > 0.05$). The mean values between more innovative and less innovative agencies in terms of knowledge sharing behavior, knowledge donating and knowledge collecting are: knowledge sharing behavior (innovative agencies M = 4.43 and less innovative agencies M= 4.29), knowledge donating (innovative agencies M = 4.36 and less innovative agencies M= 4.18) and knowledge collecting (innovative agencies M = 4.48 and less innovative agencies M= 4.37).

There is a significant difference in Islamic work ethic between more innovative and less innovative agencies ($t = 2.844$, $p < 0.05$). The results show that Islamic work ethic is higher in innovative agencies than less innovative agencies (innovative agencies M = 4.64 and less innovative agencies M= 4.46). On the other hand, there is no significant difference between more innovative and less innovative agencies in terms of perceived worship ($t = 1.260$, $p > 0.05$). This finding is supported by the results of the mean. There is a very slight mean difference between perceived worship in more

innovative and less innovative agencies (innovative agencies M = 4.75 and less innovative agencies M= 4.65). However, this study found that there are significant differences in other dimensions of Islamic work ethic between more innovative and less innovative agencies in terms of effort ($t = 2.445$, $p < 0.05$), cooperation ($t = 3.371$, $p < 0.05$) and moral responsibility ($t = 2.344$, $p < 0.05$). This result is consistent with the mean of each dimension between innovative agencies and less innovative agencies, i.e. effort (M= 4.66 more innovative agencies and M= 4.48 less innovative agencies), cooperation (M= 4.55 more innovative agencies, M= 4.29 less innovative agencies), and moral responsibility (M= 4.59 more innovative agencies and M=4.40 less innovative agencies).

Lastly, this study also finds a significant difference between more innovative and less innovative agencies in terms of entrepreneurial orientation ($t = 2.555$, $p < 0.05$). The results of the mean are supported as there is a higher entrepreneurial orientation in innovative agencies than in less innovative agencies (innovative agencies M = 3.84 and less innovative agencies M= 3.67). Further, there are a significant differences between both agencies in terms of innovativeness ($t = 2.251$, $p < 0.05$) and proactiveness ($t = 2.003$, $p < 0.05$). Innovativeness and proactiveness also presented high means in innovative agencies compared to the less innovative agencies (M= 4.04 in innovative agencies and 3.83 in less innovative agencies) and proactiveness (M= 3.71 in innovative agencies and 3.52 in less innovative agencies). Unlike other dimensions, there is no significant difference between both agencies in terms of risk taking ($t = 1.689$, $p > 0.05$). This finding is consistent with the results of the mean rating (innovative agencies M= 3.79 and less innovative agencies M= 3.67).

5. Discussion

This study attempted to investigate who among individuals in the workforce between more innovative and less innovative public sectors had a high propensity for innovative behavior, knowledge-sharing behavior, Islamic work ethic, and entrepreneurial orientation. According to Karyotakis and Moustakis (2016), critical resources such as individual character or personal attitude can be integrated as strategies for change in the public sector to accelerate innovation. Indeed, the process of innovation requires the use of knowledge to produce and apply something that is new to the customer (Nusair, Ababneh, & Kyung Bae, 2012). Therefore, it should be noted that promoting knowledge sharing among employees is crucial to enhancing innovation efforts. Knowledge sharing helps to improve service offerings, avoid service failure, and reduce costs in organizations, which all support innovation (Mat, Yaacob, & Melhem, 2016). Individual characteristics or personal attitudes, i.e., one's Islamic work ethic, is a comprehensive guide for man's virtue both as an individual and as a member of society. Therefore, it is very important for Muslims to apply these values deeply so that actions of immoral or unethical behavior can be prevented (Al-Qudsy, 2007). Individuals often characterize an organization, and individual behavior often affects it. Therefore, the dimensions of EO can be applied to individuals. The readiness of entrepreneurs to take risks and be proactive can move an organization forward (Langkamp Bolton & Lane, 2012).

The results of this study show that as the adoption of innovative behavior, knowledge sharing behavior, Islamic work ethic and entrepreneurial orientation by individual managers increases, the public sector becomes more innovative. **The findings of this study reveal that there is a significant difference between more innovative and less innovative agencies in terms of innovative behavior. Janssen, van de Vliert, and West (2004) found that individual characters with high innovative behavior will foster organization innovation through many significant ideas and positive attitudes for improvement.** The findings of this study show that there is no significant difference between more innovative and less innovative agencies in terms of knowledge sharing behavior. **This result is supported by the study of Sandhu et al. (2011). They revealed that knowledge sharing cannot be separated by relationship or interaction and mutual benefit among individuals.** I**t was found that knowledge sharing behavior resulting from social interaction can run effectively in both more innovative agencies and less innovative agencies. There is also no significant difference between more innovative and less innovative agencies in terms of knowledge donating and knowledge collecting. It indicates that both more innovative and less innovative agencies realize the importance of knowledge donating and knowledge collecting. Individual managers in more innovative and less innovative agencies perceive that knowledge donating and knowledge**

collecting facilitate work (Van den Hooff & Van Weenen, 2004) and are effective catalysts to achieving goals (Van den Hooff & Huysman, 2009).

This study found that there is a significant difference between more innovative and less innovative agencies in terms of Islamic work ethic. It is evidence that Islamic work ethic is higher in more innovative agencies than in less innovative agencies. It indicates that civil servants in less innovative agencies still lack awareness that work is a part of worship. They do not realize that the main purpose of working is not only to meet daily needs, but work is to get a blessing from Allah S.W.T. Rainey and Bozeman (2000) and Kim and Chang (2009) showed that individuals in the public sector depend on rewards for motivation. They also showed that bureaucratic structure and culture greatly affect and shape the attitude and mindset of civil servants in the public sector**. However, their results do not reveal any significant difference between more innovative and less innovative agencies in terms of perceived worship. Thereby, they will perform a virtue or Ikhlas in serving society (Ali & Al-Kazemi, 2007).** Furthermore, this study reveals that there is a significant difference between more innovative and less innovative agencies in terms of effort, cooperation and moral responsibility. This result is consistent with a previous study by Yaseen et al. (2015) that found effort, cooperation and moral responsibility are crucial elements of Islamic work ethic.

This study showed that there is a significant difference between more innovative and less innovative agencies in terms of entrepreneurial orientation based on the test of mean differences. Entrepreneurial orientation in more innovative agencies is higher than in less innovative agencies. **This finding is supported by previous studies of Miller and French (2016), Monteagudo and Martínez (2015), Omerzel (2016) and Janssen and Moors (2013).** For innovativeness, this study found a significant difference between more innovative and less innovative agencies. It appears that innovativeness is higher in more innovative agencies than in less innovative agencies. **This finding is consistent with previous studies such as Hurley and Hult (1998), Rattanawong and Suwanno (2014), and Urban and Streak (2013).** This study found that there is a significant difference between more innovative and less innovative agencies in terms of proactiveness. This study showed that proactiveness in more innovative agencies is higher than less innovative agencies. It is consistent with some previous studies (e.g. Park & Jo, 2017; Wang & Juan, 2016). This study did not reveal a significant difference between more innovative and less innovative agencies in terms of risk taking**. This finding is relevant when considering previous literature by Clark (2016) that showed that public agencies cannot control all of their employees readiness.**

5.1. Implications

This study provides theoretical contributions since it is the first empirical study to compare the effects of innovative behavior, knowledge-sharing behavior, Islamic work ethic, and entrepreneurial orientation in the public sector between more innovative and less innovative agencies. In the context of practical contribution, it provides guidelines for the government to improve its service to society. It identified that innovative behavior, knowledge-sharing behavior, Islamic work ethic, and entrepreneurial orientation are critical determiners of a public agent's success in innovation. Public sector agents that have a higher level of innovative behavior, knowledge-sharing behavior, Islamic work ethic, and entrepreneurial orientation will affect the level of innovation adopted by the organization. In other words, these elements are significant factors that influence innovation.

5.2. Limitations and Suggestions for Future Study

Besides the contributions given, this study has several limitations. This study only focuses on 8 (eight) public sectors that provide the basic needs of a society. The public sectors involved in this study are the providers of health services, transportation, housing, highway facilities, waste and public documents, etc. For future research, it is recommended to study the public sector with a broader scope of activities that are not only engaged in the basic needs of society. Respondents in this study are all managerial levels, and the perspectives at each level of manager are also different. Managers who are involved should be top or middle managers since they may have more ways of thinking more broadly about their responsibilities and the scope of their work, as compared to managers at lower levels. Future studies could also examine other factors that can influence innovation, other studies have found several drivers that empower innovation in the public sector such as leadership (Kim & Yoon, 2015),

management support (Kim & Lee, 2009), citizen involvement (Thapa, Niehaves, Seidel, & Plattfaut, 2015) and more. Since this study was carried out in the public sector, future research should expand to the private or business sector by developing new model innovations.

6. Conclusion

The results of this study show that there are significant differences between more innovative and less innovative public sector agents in terms of innovative behavior, Islamic work ethic, and its dimensions, i.e., effort, cooperation, and moral responsibility. There is also a significant difference between more innovative and less innovative agencies in terms of entrepreneurial orientation and its dimensions, i.e. innovativeness and proactiveness. Based on these statistical results, this study recommends solution to the problem of low innovation in the public sector. There is a need to build a strong awareness among civil servants of the value of the Islamic work ethic in performing duties.

Statistical results from this study also show that there is no significant difference between more innovative agencies and less innovative agencies in terms of knowledge-sharing behavior and its dimensions, i.e., knowledge donating and knowledge collecting. In other words, the statistical results obtained from this study provide clues to the government that efforts are still needed to improve problems related to the culture of sharing among public sector employees in an effort to produce various innovations to provide the best service to the community. Specifically, managerial support is very important to building a culture of knowledge sharing. There needs to be harmony between sharing knowledge and organizational culture. The results of this statistical study show that perceived worship as one of the dimensions of Islamic work ethic does not show a significant difference between more innovative and less innovative agencies. This study recommends that principles of Islamic work ethic must be instilled in the public sector. These principles are highly dependent on the religious belief of a servant to God. While one of the dimensions of entrepreneurial orientation, namely risk-taking, does not have a significant difference between more innovative and less innovative agencies. This study recommends that the government make managers primarily responsible for implementing indicators of EO such as innovativeness, proactiveness, and risk taking. If not, the public sector will never be ready to anticipate future challenges, will not progress in performing its responsibility to serve society.

References

Abbasi, A. S., Mir, G. M., & Hussain, M. (2012). Islamic work ethics: How it affects organizational learning, innovation and performance. *Actual Problems of Economics*, *12*(138), 471-480.

Agolla, J. E., & Van Lill, J. (2013). Public sector innovation drivers: A process model**.** *Journal of Social Science*, *34*(2), 165-176. Aldulaimi, S. H. (2016). Fundamental Islamic perspective of work ethics. *Journal of Islamic Accounting and Business Research*, *7*(1), 59-76.

Ahmad, S., & Owoyemi, M. Y. (2012). The concept of Islamic work ethic: An analysis of some salient points in the prophetic tradition. *International Journal of Business and Social Science*, *3*(20), 116–123.

Åmo, B. W., & Kolvereid, L. (2005). Organizational strategy, individual personality and innovation behavior. *Journal of Enterprising Culture*, *13*(1), 7-19.

Awan, K. Z., & Akram, M. (2012). The relationship between Islamic work ethics and innovation capability and knowledge sharing plays moderation role. *International Journal of Economics and Management Sciences*, *1*(8), 34-48.

Batool S. M. K., Gul A., & Shahzad K. (2013). Combined Effects of Ethical Leadership and Islamic Work Ethics (IWE) on Organizational Commitment and Job Satisfaction. *Journal of Islamic Business and Management*, *3*(1), 35-49.

Bedoya, M. A., Alzate, B. A., & Giraldo, L. M. (2018, August). Corporate Entrepreneurship and Entrepreneurial Orientation: The Impact on Managing Capabilities for Innovation. In *2018 Portland International Conference on Management of Engineering and Technology (PICMET)* (pp. 1-7). IEEE.

Borins, S. (2001a). Encouraging innovation in the public sector. *Journal of Intellectual Capital*, *2*(3), 310-319. doi: 10.1108/14691930110400128

Borins, S. (2001b). *The challenge of innovating in government*. The Pricewaterhouse Coopers Endowment for the Business of Government. Arlington, VA.

Bloch, C., & Bugge, M. M. (2013). Public sector innovation-From theory to measurement. *Structural Change and Economic Dynamics*, *27*, 133-145.

Cankar, S. S., & Petkovsek, V. (2013). Private and public sector innovation and the importance of cross-sector collaboration. *Journal of Applied Business Research*, *29*(6), 1597-1606.

Carmeli, A., Meitar, R., & Weisberg, J. (2006). Self-leadership skills and innovative behavior at work. *International Journal of Manpower*, *27*(1), 75-90.

Čivre, Ž., & Gomezelj Omerzel, D. (2015). The behavior of tourism firms in the area of innovativeness. *Economic Research-Ekonomska Istraživanja*, *28*(1), 312-330. doi: 10.1080/1331677X.2015.1043778

Coakes, S. J. & Steed, L. G. (2003). *SPSS: analysis without anguish:* version 11.0 for Windows. Brisbane: Jacaranda Wiley.

Connelly, C. E., & Kevin Kelloway, E. (2003). Predictors of employees' perceptions of knowledge sharing cultures. *Leadership & Organization Development Journal*, *24*(5), 294-301.

De Jong, J., & Den Hartog, D. (2010). Measuring innovative work behavior. *Creativity and Innovation Management*, *19*(1), 23-36.

Demircioglu, M. A., & Audretsch, D. B. (2017). Conditions for innovation in public sector organizations. *Research Policy*, *46*(9), 1681-1691.

Farrukh, M., Butt, S., & Mansori, S. (2015). Innovation capability: The role of Islamic work ethics. *Journal of Asian Business Strategy*, *5*(7), 125-131.

Franco, M., & Haase, H. (2013). Firm resources and entrepreneurial orientation as determinants for collaborative entrepreneurship. *Management Decision*, *51*(3), 680–696.

Giebels, E., de Reuver, R. S., Rispens, S., & Ufkes, E. G. (2016). The critical roles of task conflict and job autonomy in the relationship between proactive personalities and innovative employee behavior. *The Journal of Applied Behavioral Science*, *52*(3) 320–341.

Hayati, K., & Caniago, I. (2012). Islamic work ethic: the role of intrinsic motivation, job satisfaction, organizational commitment and job performance. *Procedia-Social and Behavioral Sciences 65*(2012), 272-277.

Hartley, J. (2005). Innovation in governance and public services: Past and present. *Public Money and Management*, *25*(1), 27-34.

Hu, M. L. M., Horng, J. S., & Sun, Y. H. C. (2009). Hospitality teams: Knowledge sharing and service innovation performance. *Tourism Management*,*30*(1), 41-50. doi:10.1016/j.tourman.2008.04.009

Huang, S. K., & Wang, Y.-L. (2011). Entrepreneurial orientation, learning orientation, and innovation in small and medium enterprises. *Procedia - Social and Behavioral Sciences*, *24*(*2011*), 563–570.

Hurley, R. F., & Hult, G. T. M. (1998). Innovation, market orientation, and organizational learning: an integration and empirical examination. *The Journal of Marketing*, 62(3), 42-54.

Hussain, K., Konar, R., & Ali, F. (2016). Measuring Service Innovation Performance through Team Culture and Knowledge Sharing Behaviour in Hotel Services: A PLS Approach. *Procedia-Social and Behavioral Sciences, 224*, 35-43.

Hormiga, E., Hancock, C., & Valls- Pasola, J. (2013). The relationship between employee propensity to innovate and their decision to create a company. *Management Decision, 51*(5), 938–953.

Janssen, O. (2000). Job demands, perceptions of effort- reward fairness and innovative work behavior. *Journal of Occupational and Organizational Psychology, 73*(3), 287-302.

Janssen, M., & Moors, E. H. M. (2013). Caring for healthcare entrepreneurs — Towards successful entrepreneurial strategies for sustainable innovations in Dutch healthcare. *Technological Forecasting and Social Change, 80*(7), 1360–1374.

Janssen, O., van de Vliert, E., & West, M. (2004). The bright and dark sides of individual and group innovation: a Special Issue introduction. Journal of Organizational Behavior, 25(2), 129–145.

Kamarck, E. (2004). Government Innovation Around the World. Ash Institute for Democratic Governance and Innovation, John F Kennedy School of Government, Harvard University, Boston, MA.

Karyotakis, K. M., & Moustakis, V. S. (2016). Organizational factors, organizational culture, job satisfaction and entrepreneurial orientation in public administration. *The European Journal of Applied Economics, 13*(1), 47-59.

Khan, A. S., & Rasheed, F. (2015). Human resource management practices and project success, a moderating role of Islamic work ethics in Pakistani project-based organizations. *International Journal of Project Management, 33*(2), 435-445.

Khanagha, A., Dehkordi, A. M., Zali, M. R., & Hejazi, S. R. (2017). Performance implications of entrepreneurial orientation at public research and technology institutions. *Entrepreneurship and Sustainability Issues, 4*(4), 601-610.

Kim, S., & Yoon, G. (2015). An Innovation-Driven Culture in Local Government. Public Personnel Management, 44(2), 147–168.

Kohli, J., & Mulgan, G. (2010). Capital Ideas: How to generate innovation in the public sector. *Center for American Progress and The Young Foundation*, July 2010, 1-31.

Koch, P., Cunningham, P., Schwabsky, N., Hauknes, J., 2006. Innovation in The public sector – summary and policy recommendations. NIFU STEP, Oslo.

Kumar, N., & Che Rose, R. (2010). Examining the link between Islamic work ethic and innovation capability. *Journal of Management Development, 29*(1), 79-93.

Kumar, N., & Che Rose, R. (2012). The impact of knowledge sharing and Islamic work ethic on innovation capability. *Cross Cultural Management: An International Journal, 19*(2), 142-165.

Lægreid, P., Roness, P. G., & Verhoest, K. (2011). Explaining the Innovative Culture and Activities of State Agencies. Organization Studies, 32(10), 1321–1347.

Lee, H. S., & Hong, S. A. (2014). Factors affecting hospital employees' knowledge sharing intention and behavior, and innovation behavior. *Osong Public Health and Research Perspectives, 5*(3), 148-155.

Lee, C., Lee, K., & Pennings, J. M. (2001). Internal capabilities, external networks, and performance: a study on technology- based ventures. *Strategic Management Journal, 22*(6- 7), 615-640.

Lekhi, R. (2007). *Public Service Innovation: A Research Report for the Work Foundation's Knowledge Economy Programme*. Manchester: The Work Foundation

Liebowitz, J. (2002). Facilitating innovation through knowledge sharing: a look at the US naval surface warfare center-carderock division. *Journal of Computer Information Systems, 42*(5), 1-6.

Liu, C.-H. S., & Lee, T. (2018). The multilevel effects of transformational leadership on entrepreneurial orientation and service innovation. *International Journal of Hospitality Management.*

Marouf, L. (2015). Employee perception of the knowledge sharing culture in Kuwaiti companies: effect of demographic characteristics. *LIBRES: Library and Information Science Research Electronic Journal*, 25(2), 103-118.

Marouf, L. (2016). The role of knowledge sharing culture in business performance. *VINE Journal of Information and Knowledge Management Systems, 46*(2), 154-174.

McFarlane, R. J. (2007). WA Public Sector Innovation : Issues and Opportunities. *Centre for Entrepreneurial Management and Innovation, Australia,* Discussion Paper Series, DP 0401

Meynhardt, T., & Diefenbach, F. E. (2012). What drives entrepreneurial orientation in the public sector? Evidence from Germany's federal labor agency. *Journal of Public Administration Research and Theory, 22*(4), 761-792.

Miller, F. A., & French, M. (2016). Organizing the entrepreneurial hospital: Hybridizing the logics of healthcare and innovation. *Research Policy, 45*(8), 1534–1544.

Miron, E., Erez, M., & Naveh, E. (2004). Do personal characteristics and cultural values that promote innovation, quality, and efficiency compete or complement each other?. *Journal of Organizational Behavior*, *25*(2), 175-199.

Maatoofi, A. R., & Tajeddini, K. (2011). Effect of market orientation and entrepreneurial orientation on innovation: evidence from auto parts manufacturing in Iran. *Journal of Management Research*, *11*(1), 20.

Moore, M. H. (2005). Break-through innovations and continuous improvement: two different models of innovative processes in the public sector. *Public Money & Management*, *25*(1), 43-50.

Moore, M., & Hartley, J. (2008). Innovations in governance. *Public Management Review*, *10*(1), 3-20.

Monteagudo, I. C., & Martínez, M. S. C. (2015). Drivers of entrepreneurship innovation in tourism sector: entrepreneurship, knowledge and internationalization. *Icade: Revista de las Facultades de Derecho y Ciencias Económicas y Empresariales*, (94), 11-29.

Mulgan, G. (2014). Innovation in the Public Sector; How can public organisations better create, improve and adapt?. *London: Nesta*

Mulgan, G., & Albury, D. (2003). Innovation in the public sector. *Strategy Unit, Cabinet Office, London*

Murtaza, G., Abbas, M., Raja, U., Roques, O., Khalid, A., & Mushtaq, R. (2014). Impact of Islamic work ethics on organizational citizenship behaviors and knowledge-sharing behaviors. *Journal of Business Ethics*, *133*(2), 325-333.

Nasution, H. N., Mavondo, F. T., Matanda, M. J., & Ndubisi, N. O. (2011). Entrepreneurship: Its relationship with market orientation and learning orientation and as antecedents to innovation and customer value. *Industrial Marketing Management*, *40*(3), 336-345.

Nybakk, E., & Hansen, E. (2008). Entrepreneurial attitude, innovation and performance among Norwegian nature-based tourism enterprises. *Forest Policy and Economics*, *10*(7), 473-479.

Omerzel, D. G. (2016). The Impact of Entrepreneurial Characteristics and Organisational Culture on Innovativeness in Tourism Firms. *Managing Global Transitions*, *14*(1), 93-110.

Park, S., & Jo, S. J. (2017). The impact of proactivity, leader-member exchange, and climate for innovation on innovative behavior in the Korean government sector. *Leadership & Organization Development Journal*, *39*(1), 130-149.

Parker, R., & Bradley, L. (2000). Organisational culture in the public sector: evidence from six organisations. *International Journal of Public Sector Management*, *13*(2), 125-141.

Potts, J. and Kastelle, T. (2010). Public sector innovation research: What's next?. *Innovation: Management, Policy and Practice*, *12*(2), 122-137.

Rattanawong, W., & Suwanno, N. (2014). Antecedents and consequences of service innovation: an empirical study of touring business in the southern part of Thailand. *Journal of Entrepreneurship and Business Innovation*, *1*(1), 48-59.

Rokhman, W., & Hassan, A. (2014). The effect of Islamic work ethic on organisational justice. *African Journal of Business Ethics*, *6*(1), 25-29.

Roberts, N. C. (1992). Public entrepreneurship and innovation. *Review of Policy Research*, *11*(1), 55-74.

Robertson, R., & Ball, R. (2002). Innovation and improvement in the delivery of public services: the use of quality management within local government in Canada. *Public Organization Review*, *2*(4), 387-405.

Ross, A. (2015). Establishing a system for innovation in a professional services firm. *Business Horizons*, *59*(2), 137-147.

Rokhman, W. (2010). The effect of Islamic work ethics on work outcomes. *Electronic Journal of Business Ethics and Organization Studies*, *15*(1), 21-27.

Rusly, F., Yih-Tong Sun, P., & L. Corner, J. (2014). The impact of change readiness on the knowledge sharing process for professional service firms. *Journal of Knowledge Management*, *18*(4), 687-709.

Sandhu, M.S, Jain K.K., & Kalthom, I.U. bte Ahmad (2011). Knowledge sharing among public sector employees: evidence from Malaysia. *International Journal of Public Sector Management*, *24*(3), 206-226.

Scott, S. G., & Bruce, R. A. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. *Academy of Management Journal*, *37*(3), 580-607.

Sekaran, U. (2003). *Research Methods For Business: A skill Building Approach* (Fourth Edition). New York: John Wiley & Sons, Inc

Senge, P. (1990). *The fifth discipline: The art and practice of the learning organization.* New York: Doubleday.

Schneider, B. (1975). Organizational climates: An essay. *Personnel psychology*, *28*(4), 447-479

Subramanian, A., & Nilakanta, S. (1996). Organizational innovativeness: Exploring the relationship between organizational determinants of innovation, types of innovations, and measures of organizational performance. Omega, 24(6), 631–647.

Sveiby, K., & Simons, R. (2002). Collaborative climate and effectiveness of knowledge work-an empirical study. *Journal of Knowledge Management 6*(5), 420-433.

Scott, S. G., & Bruce, R. A. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. *Academy of Management Journal*, *37*(3), 580-607.

The Ministry of State Apparatus Empowerment and Bureaucracy Reform Assistance Team, Republic of Indonesia (2015). *Innovation Competition of Public Service in Ministry, Institution, and Local Government 2016: Regulation No. 15 in 2015.* Retrieved July 22, 2016 from https://jdih.menpan.go.id/data_puu/15.pdf

The Ministry of State Apparatus Empowerment, Republic of Indonesia (2004). *The guidelines Society Satisfaction Index of Service Unit Government Institution No. KEP/25/M.PAN/2/2004 in 2004.* Retrievied February 17, 2016, from http://fapet.ub.ac.id/wp-content/uploads/2013/03/Kep-Men-PAN-25-Th-2004-Ttg-Pedoman-Umum-Penyusunan-IKM.pdf

Tajdini, J., & Tajeddini, O. (2018). Innovativeness and knowledge management in public sector enterprises. *Middle East Journal of Management*, *5*(3), 271-295.

Tajeddini, K. (2016). Analyzing the influence of learning orientation and innovativeness on performance of public organizations: The case of Iran. *Journal of Management Development*, *35*(2), 134-153.

Tajeddini, K., & Trueman, M. (2016). Environment-strategy and alignment in a restricted, transitional economy: Empirical research on its application to Iranian state-owned enterprises. *Long Range Planning*, *49*(5), 570-583.

Titi Amayah, A. (2013). Determinants of knowledge sharing in a public sector organization. *Journal of Knowledge Management*, *17*(3), 454-471.

Torugsa, N. (Ann), & Arundel, A. (2017). Rethinking the effect of risk aversion on the benefits of service innovations in public administration agencies. *Research Policy, 46*(5), 900–910.

Urban, B., & Streak, M. (2013). Product innovation of private health insurers in South Africa and the impact of entrepreneurial orientation. *South African Journal of Economic and Management Sciences*, *16*(3), 298-315.

Vigoda-Gadot, E., Shoham, A., Schwabsky, N., & Ruvio, A. (2005). Public sector innovation for the managerial and the post-managerial era: Promises and realities in a globalizing public administration. *International Public Management Journal*, *8*(1), 57-81.

Vigoda- Gadot, E., Shoham, A., Schwabsky, N., & Ruvio, A. (2008). Public sector innovation for europe: A multinational eight- country exploration of citizens'perspectives. *Public Administration*, *86*(2), 307-329.

Van den Hooff, B., & de Leeuw van Weenen, F. (2004). Committed to share: commitment and CMC use as antecedents of knowledge sharing. *Knowledge and Process Management*, *11*(1), 13-24.

Van den Hooff, B., & Huysman, M. (2009). Managing knowledge sharing: Emergent and engineering approaches. *Information & Management*, *46*(1), 1-8.

Vong, S., Zo, H., & Ciganek, A. P. (2014). *Knowledge sharing in the public sector. Information Development, 32(3), 409–423.*

Wahab, M. A., Quazi, A., & Blackman, D. (2016). *Measuring and validating Islamic work value constructs: An empirical exploration using Malaysian samples. Journal of Business Research, 69(10), 4194–4204.*

Wang, E. S. T., & Juan, P. Y. (2016). Entrepreneurial orientation and service innovation on consumer response: A B&B Case. *Journal of Small Business Management*, *54*(2), 532-545.

Wei Chong, C., Yen Yuen, Y., & Chew Gan, G. (2014). Knowledge sharing of academic staff: A comparison between private and public universities in Malaysia. *Library Review*, *63*(3), 203-223.

Wiklund, J., & Shepherd, D. (2005). Entrepreneurial orientation and small business performance: a configurational approach. *Journal of business venturing*, *20*(1), 71-91.

Wynen, J., Verhoest, K., Ongaro, E. & Van Thiel (2013). Innovation-Oriented Culture in the Public Sector: Do managerial autonomy and result control lead to innovation? Public Management Review, 16(1), 45–66. doi:10.1080/14719037.2013.790273

Yaseen, S. G., Dajani, D., & Mazen, S. (2015). Islamic work ethics and organizational commitment: a case of Jordanian Islamic banks. In book: *Handbook of Research on Islamic Business Ethics*, Edition 1, Chapter 15, 287-303. Edward Elgar Publishing, UK.

Yeşil, S., & Hırlak, B. (2013). An empirical investigation into the influence of knowledge sharing barriers on knowledge sharing and individual innovation behavior. *International Journal of Knowledge Management (IJKM)*, *9*(2), 38-61.

Yu, C., Yu, T. F., & Yu, C. C. (2013). Knowledge sharing, organizational climate, and innovative behavior: a cross-level analysis of effects. *Social Behavior and Personality: an International Journal*, *41*(1), 143-156.

Yuan, F., & Woodman, R. W. (2010). Innovative behavior in the workplace: the role of performance and image outcome expectations. *Academy of Management Journal*, *53*(2), 323-342.

Yousef, D. A. (2001). Islamic work ethic–A moderator between organizational commitment and job satisfaction in a cross-cultural context. *Personnel review*, *30*(2), 152-169.