CULTURE SHOCK: CULTURAL FACTORS THAT

KILL FIREFIGHTERS ON THE GROUND

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CLUTURE SHOCK: CULTURAL FACTORS THAT

KILL FIREFIGHTERS ON THE GROUND

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Abstract: Firefighting is an intrinsically dangerous job that always has a risk of death (Kahn et al., 2015). In the United States, 786 firefighters died during field work over the last 10 years (USFA, 2018). Despite many advances in technology, firefighters' safety has not improved significantly. Therefore, this study began to find the cause. Through literature review, I found three cultural issues that impact firefighters' safety: 1) culture of being a hero, 2) aggressive firefighting activities, and 3) the resistance to change.

First, heroism means altruistic activities that take risks to save lives and properties of citizens (Rothmeier, 2017). Firefighters value courage and self-sacrifice, and have strong pride (Cox, 2012). Second, aggressive and improper firefighting activities mean responding to disasters in an aggressive and bold way. Thus, conducting aggressive tactics can put firefighters in unnecessary danger. This research shows three cases of firefighters killed by aggressive strategies and activities. Third, one of the cultural characteristics of fire departments is the resistance to change (USFA, 2015). Firefighters are so proud of their traditions and values, so they tend to be reluctant to change those values (Smeby, 2013). In addition, an informal hierarchy has been formed in the fire department because of the way older firefighters transfer skills to younger firefighters (Baigent, 2001). It acts as a barrier to change in the fire department.

The aim of this research is to explore how cultural issues jeopardize firefighters' lives on the ground. Qualitative approach was adopted for this research. Specifically, a web-based questionnaire survey that consisted of open-ended questions was used to collect data. Emails with the survey link were sent to all FEMP students and some instructors of OSU Fire Service Training. Data was finally collected from ten firefighters and the qualitative content analysis methodology was utilized to analyze the data.

Through analysis of data, I found that cultural issues impact firefighting operations and firefighters' safety. Based on the analysis, this research provides some suggestions on fire service administration: 1) establishing effective leadership, 2) recognizing and allowing improvisation, and 3) communicating with members before conducting change. In addition, based on the limitations of this study, future research is suggested to further develop this study.

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CHAPTER I

INTRODUCTION

Firefighting is a career that requires working in extreme environments. Kahn et al. (2015), for instance, state that the job of a firefighter is intrinsically dangerous and always has a risk of death. Clarke and Zak (1999), Kunadharaju et al. (2011), and Moore-Merrell et al. (2008) further explain that the threat of inhaling toxic gases, asphyxiation, high heat, sudden development in fire size, loss of direction due to low visibility, and collapse of a structure jeopardize firefighters' safety while they work in hazardous situations (e.g., structural fires, wildland fires, hurricanes, earthquakes, floods, and terrorist attacks). According to statistical data retrieved from the United States Fire Administration (USFA, 2018), over the last 10 years, 786 firefighters died in the line of duty in the United States, and 73 of these firefighters died on the ground due to the conditions known as "trapped by fire" and "lost and disoriented" (see USFA reports from 2009 to 2018 for further information).

Not only does the hazardous working environment deteriorate firefighters′ physical health and safety, this job also creates serious mental stress because firefighters are expected to handle difficult moments (such as life and death situations), witness dead bodies, and work with distressed people requiring assistance (Couper et al., 2013). Moreover, the lifestyle in fire stations makes it hard for firefighters to follow a regular

sleep and exercise schedule, which further decreases firefighters′ health conditions

(Billings, 2014; Reinhardt-Klein, 2010). Consequently, the death rate of being a

firefighter is three times higher than in other occupations (Kunadharaju et al., 2011). In

addition, a firefighter's lifespan is ten years shorter than the average person (McNamee,

2001).

As mentioned above, firefighting is a hazardous occupation. Furthermore, since

the danger cannot be eliminated, it is important to identify some factors that can make it

safer (Freaney, 2011). When we look closer at the hazards of firefighters on the ground,

we can find certain cultural issues that impede the safety of firefighters. Organizational

culture, for instance, is a key factor influencing firefighters' operations and decision-

making abilities on the ground (Lisi, 2005; Fresno Fire Department, 2015).

Organizational culture means the basic assumptions, beliefs, and value systems that

members of an organization have in common (Awadh and Saad, 2013; Gregory et al.,

2009; Lund, 2003; Schein, 1984; Tharp, 2009). Some cultural factors of firefighting

organizations may have a negative influence on firefighters' safety (Fresno Fire

Department, 2015). When looking closely at the lives of those firefighters killed at the

scene of a fire, a few cultural issues become apparent. They are: 1) culture of being a

hero (Brauer, 2016; Reinhardt-Klein, 2010; USFA, 2015); 2) aggressive and improper

firefighting strategies and activities (Texas State Fire Marshal's Office reports FY 11-02,

2011; FY 11-03, 2011; and FY 17-02, 2017); and 3) the resistance to change (Rothmeier,

2017; Siarnicki and Gist, 2010; Smeby, 2013; USFA, 2015).

First of all, the heroism refers to altruistic activities that challenge intrinsically

dangerous situations (Rothmeier, 2017). Firefighters value courage and self-sacrifice, and

some of them are proud to risk their lives to save citizens (Cox, 2012; Siarnicki and Gist, 2010). Many firefighters, without a complete understanding of risks and risk management on the ground, believe those risks generated from fighting fires cannot be reduced. As a result, these firefighters believe the more dangerous tactics they conduct, the more lives they can rescue and if they only preform risk-free activities, they will not save any lives (Linke, 2008). This assumption creates a heroic public image in their jurisdictions. It also, however, encourages firefighters to take unnecessary risks on the ground – such as performing activities beyond their abilities. According to the USFA (2015), firefighters often talk about their public and organizational managers' expectations to be altruistic heroes with high-risk behavior. Most compliments in ceremonies about firefighters, for instance, start with their rescue activities and how firefighters risk their lives to save civilians (Siarnicki and Gist, 2010). This culture and preference of being a hero encourages a firefighter to complete the firefighting mission, prior to securing their own safety (Reinhardt-Klein, 2010). Firefighters who appreciate the heroic culture, for example, might enter a fire without wearing proper protective gear and might rush to finish their mission without considering the overall firefighting strategy and direction. Conducting these activities and freelancing on the ground jeopardizes not only the firefighter's safety, in many cases, but also his/her team members' lives (Moynihan, 2007; NIOSH, 2017; and Texas Fire Marshal's Office, 2017).

As a result, secondly, conducting aggressive and inappropriate firefighting tactics on the ground creates additional risks for all firefighters. One of the behavioral characteristics of members of the fire and emergency organizations is their tendency to respond to disasters in a bold and aggressive manner (Cox, 2012; USFA, 2015). Here are

three cases where firefighters died from aggressive and inappropriate firefighting strategies and activities. First, in a shopping complex fire in 2017, a firefighter died from a sudden worsening of the situation and the loss of their sense of direction. The investigation found that the death was preventable because the accident was caused by the commander's "misguided aggressive strategy" and the "freelancing activity" of the firefighter (Texas State Fire Marshal's Office FY 17-02, 2017). To be more specific, when the initial commander first observed the fire, he recognized that the fire could grow larger later, however he adopted aggressive tactics; even though the interior was dark and black smoke was coming out, the commander demanded a search inside the building without conducting any initial activity to cool down the building. This was a situation in which the crews did not have to enter the building (Texas State Fire Marshal's Office FY 17-02, 2017). Second, one firefighter died from severe burns at a wildland fire in 2011. The main reasons for his death are aggressive strategies with a high risk and inappropriate personal protective equipment (Texas State Fire Marshal's Office FY 11-02, 2011). More specifically, limited available labor and resources, as well as bad weather conditions in the wildland fire required the adoption of a defensive tactic, however the firefighter did not pursue this tactic (Texas State Fire Marshal's Office FY 11-02, 2011). The firefighter worked in the unburned area to suppress the wildland fire, however this wasn't an appropriate tactic because the suppression activity of a wildland fire has to be carried out in the burned area to protect a firefighter from a sudden change in the fire to the unburned area. The firefighter also did not fully wear personal protective equipment as prescribed (Texas State Fire Marshal's Office FY 11-02, 2011). Finally, in 2011, another firefighter was killed by chest trauma while escaping from a wildland fire

because of a sudden change in the fire. According to the Texas State Fire Marshal's Office FY 11-03 (2011), the cause of his death was aggressive firefighting strategy and inadequate incident management. Specifically, when considering the scarce personnel and resources, a defensive strategy should have been used, however the firefighting brigade did not pursue this strategy (Texas State Fire Marshal's Office FY 11-03, 2011). In addition, the incident commander had to be in a position to easily communicate with the firefighters, in order to collect information and organize the firefighters better. However, the incident commander was not in proper position, because the commander was performing additional tasks due to the shortage of personnel (Texas State Fire Marshal's Office FY 11-03, 2011).

Last but not least, the resistance to change creates another cultural barrier in securing firefighters' safety (Siarnicki and Gist, 2010). After reviewing the major reasons firefighters died on duty, for instance, the NIOSH (2017) recommended certain changes to the practice and strategies on the ground, such as methods of wearing personal safety equipment, tactics on entering a burning building, and maintaining crew integrity. Changing the firefighting actions on the ground, however, happens slowly. Even in the some recent deaths, we find that firefighters passed away due to improperly wearing protection gear (see Fahy and Molis, 2019; NIOSH 2017; Texas State Fire Marshal's Office FY 11-07, 2011, for the case studies). Resistance to change is described as one of the important characteristics of firefighting organizational culture (Rothmeier, 2017; Thurnell-Read and Parker, 2008; USFA, 2015). As Smeby (2013) says, it is very difficult to drive change in fire departments because firefighters have a strong sense of pride in their traditions and heritage. Especially, senior firefighters treat any change as an attack

on the routine and predictable environment, or as a violation of their existing rights. A fire department has an informal hierarchy, which is formed by the direct inheritance of skills and knowledge from older firefighters to younger firefighters (Baigent, 2001; Cox, 2012). The informal hierarchy in the fire department has a significant influence on firefighters and makes it hard for officers to change or challenge existing practices and culture (Baigent, 2001).

This research will study the culture of firefighting organizations that can affect the safety of firefighters. To collect data for this study, the researcher will conduct an interview with 10 firefighters via Qualtrics Online Survey Software. The interviewees in this research will be limited to firefighters that are currently working. The investigatory interviews into cultural studies may include errors because of the nature of examining the organizational culture at a particular point in time. As a result, many interviews over the years and direct observations about the organization by the researcher may provide more accurate data.

This research aims to explore how cultural issues jeopardize firefighters' lives on the ground. In the coming sections, this study will review the relevant literature to understand the major cultural issues that risk firefighters' lives, and then a research question will be proposed at the end of my literature review. To answer my research question, I will select a research method to collect data that would be best suited to answer my research question. This research will also explain the details of data collection and analyses. At the end of this thesis, in order to change the current firefighting culture and consequently enhance firefighters' safety on the ground, some suggestions to fire departments will be provided.

CHAPTER II

LITERATURE REVIEW

In this chapter, I will review discussions on how the organizational culture influences firefighters' activities on the ground and thus jeopardizes their safety. I will begin to discuss the literature on what organizational culture is and how the organizational culture affects employees' performance and then use above discussions to review some common firefighting cultural factors and how these cultural factors impact firefighters' safety on the ground.

Organizational Culture and Organization Performance

Every human society has its own unique culture that can be distinguished from other communities. Culture is usually formed over a long period of time and changed with the history of the society. Scholars have tried to conceptualize culture as shared perception systems and shared meaning systems (Lee and Yu, 2004). According to Lim (1995), culture usually represents the type of beliefs, behaviors, and values shared in a society. Like society, most organizations also have their own culture that can be distinguished from other organizations (Prajogo and McDermott, 2011; Reynolds, 1986). For example, uniformed organizations like fire and police departments show cultural characteristics emphasizing responsibility and loyalty, which is stronger than other organizations. In general, organizational culture indicates the common beliefs, moral systems, and basic assumptions that the organization's members have in common

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(Gregory et al., 2008). That is, organizational culture is a common part of values and ideas among members. Members of the organization tend to behave and be judged by their common beliefs and values (Gregory et al., 2008).

Schein (1984) argues that organizational culture is a form of value system that the organization has learned over the years as it has faced a number of problems and solved them. Hence, organizational culture is the value that new members must learn in order to be recognized as the member of an organization. In addition, organizational culture creates the rules of behavior for organization's members and affects organizational structure, systems, and direction (Lund, 2003). The culture of an organization can be described as a mixture of values, beliefs, actions, and communication of the organizational members, making an organization distinct from other organizations (Awadh and Saad, 2013).

According to Schein (1984), the organizational culture can be divided into three levels: "values", "basic assumptions", and "artifacts". To be more specific, values provide the criteria of evaluation and validity of members behavior; basic assumptions are a system of common perceptions and ideas that members learn upon joining their workplace; and artifacts mean things from the past such as dress codes, ornaments, customary ceremonies, and myths (Schein, 1984). In addition, Martin and Siehl (1983) added management practices as the fourth level to Schein's three levels of culture. That is, management practices refer to employee training, performance appraisal, compensation schemes, and employment procedures required for organizational management.

Many scholars have focused on cultural studies in two respects: the strength of culture and the content of culture (Prajogo and McDermott, 2011). The content and strength of culture are different for each organization. The content of culture refers to the quality and characteristics of the organizational culture shared by the members of an organization (Prajogo and McDermott, 2011). The strength of culture is the stability and homogeneity of the members within the organization, and the time and extent of experiences shared by members (Schein, 1984). A strong culture and a quality culture both have positive results, but the combination of the two is stronger (Lee and Yu, 2004).

As such, organizational culture has a great deal of influence on all parts of an organization, including all systems, structure, rules, and practices. In addition, organizational culture can serve as: 1) a tool to understand the history and future of the organization; 2) a motive for members commitment to their organization; 3) means to control its members; and 4) a contributor to higher productivity and profitability (Martin and Siehl, 1983). Thus, knowing the culture of an organization also allows us to know the behavior and attitude of the current members and to predict their actions in the future.

As we have seen above, the definition of organizational culture varies widely among scholars, and it is very difficult to give it a single definition. However, there are some commonalities found in the definitions of many scholars. First, culture is a common value and belief system and assumption that organizational members share. Second, culture is formed and passed down from existing members to new members over a long period of time. Third, the culture of an organization is different from the culture of other organizations. Fourth, the members of an organization act and think based on their

organizational culture. The above definitions show that organizational culture is difficult to change in the short term and apply equally to all organizations.

All organizations have goals relevant to their business and struggle to accomplish their objectives (Heyes, 2002, p. 105; Quinn and Rohrbaugh, 1981). The extent to which organizations achieve their goals is often referred to as organizational effectiveness or performance (Cameron, 1978; Lim, 1995). Conditions and environmental factors that affect the performance of an organization vary widely, including compensation, promotion, motivation, trust, technology, and financial support. In addition, the performance of organizations with similar conditions and environments can be different. In the 1980s, in order to explain these differences, studies investigating the relationship between organizational culture and organizational performance started to emerge. Some literature has denied a significant link between organizational culture and organizational performance (Arogyaswamy and Byles, 1987; Reynolds, 1986), but most researchers have argued that significant relationship does exist between them (Brown, 1992; Awadh and Saad, 2013; Denison, 1984; Denison and Mishra, 1989; Denison and Mishra, 1995; Gregory et al., 2009; Lee and Yu, 2004; Ojo, 2009; Petty et al., 1995; Prajogo and McDermott, 2011). For example, Arogyaswamy and Byles (1987) argue that organizational culture is just one of many factors that can account for organizational performance. Reynolds (1986) also shows that there is no significant correlation between organizational culture and organizational performance.

Conversely, Brown (1992) asserts that organizational culture can be a powerful tool for managing organizations and improving organizational performance. Schein (1984) maintains in his research that organizational culture makes a decisive contribution

to the quality of organizations. According to Lee and Yu (2004), strong culture means strong homogeneity in the values of the members of the organization; if this strong culture is combined with appropriate content, it has a very positive effect on the performance of the organization. In a study of 12 organizations of an electric utility company, Petty et al. (1995) argue that organizational culture that emphasizes cooperation has a more positive impact on organizational effectiveness than not. Denison (1984), after comparing the cultures of 34 big companies in the United States, claims that companies with participating cultures earn twice as much as those that do not. The cultural and behavioral aspects of an organization are closely linked to organizational performance. Through a study conducted in 99 hospitals, Gregory et al. (2009) found that organizational culture influenced the attitudes of employees and their attitudes affected the organizational effectiveness. They also pointed out that members within organizations made their actions and decisions based on organizational values; the attitudes and behaviors of the employees had a considerable influence on the organization's performance and progress. In addition, the results of a study conducted in the Nigerian banking industry showed that organizational culture had a significant impact on employee performance and organizational productivity (Ojo, 2009).

Quinn and Rohrbaugh (1981) argued that there is a desirable culture for each organization to maximize the effectiveness of the organization. In addition, they created a competing values model. Through this model, the culture of many organizations was analyzed in the 1990s and 2000s. According to the competing values model, organizational culture is classified into development, group, market, and hierarchy culture. Among the four cultures, each organization should develop one or two cultural

characteristics appropriate to their environment in order to maximize their performance (Denison and Spreitzer, 1991; Goodman et al., 2001; Gregory et al., 2008; Quinn and Rohrbaugh, 1981).

As we have seen above, the relevance of organizational effectiveness and organizational culture has been assumed by most researchers (Gregory et al., 2009; Lewis, 1994). However, many studies reveal significant differences and weaknesses in the definition of culture (Lewis, 1994) and performance measures (Lim, 1995). This means that the results of the research can be different depending on how the characteristics of the culture are identified and how performance is measured. Therefore, it is necessary to understand the cultural characteristics of an organization and a method should be developed for measuring correct organizational performance.

The Culture of Firefighting Organizations

Over the past several decades, the probability of firefighter deaths and injuries occurring in the field has not declined despite the improvement in protective equipment, training, and standard procedures (Burton, 2007; Kunadharaju et al., 2011; Pessemier, 2008; Reinhardt-Klein, 2010; USFA, 2015). To solve this issue, some researchers have looked at cultural factors within the fire departments. Cultural morals and values have an impact on a great deal of factors in the firefighting organizations (Fresno Fire Department, 2015). Pessemier (2008) argues that establishing an appropriate safety culture within an organization can reduce the number of firefighters who die during field work. Kunadharaju et al. (2011) analyzed the NIOSH report that investigated the deaths of 189 firefighters from 2004 to 2009, and then identified four major causes of firefighters' death: 1) lack of resources, 2) lack of preparation, 3) inappropriate incident command

procedures, and 4) personnel problems. They also argued that the culture of the fire departments influenced the occurrence of the causes.

The Phase II Report by the city of Charleston (2008) shows that one of the main causes of death of nine firefighters in 2007 was the culture of the Charleston fire department. That is, the Charleston fire department's culture had a significant impact on improper attack tactics that put firefighters at unnecessary risk. The USFA (2015) applied Schein's (1984) three levels of culture to the fire department's culture: value system, basic assumptions, and behavior. Firefighters tend to extinguish the fire in a brave and aggressive way. This is because the value system of the fire service culture supports the behavior; the value system is based on the basic assumptions of a firefighting organizational culture that fire should be suppressed as soon as possible (USFA, 2015). As such, organizational culture is one of the main causes in firefighters' death. Therefore, the culture of a firefighting organization should be improved. To do this, it is essential to understand the culture of firefighting organizations.

The culture of the fire department shows distinctive cultural characteristics that are significantly different from other organizations (Soeters, 2000). According to Soeters (2000), the firefighting profession requires shift work involving night shifts, strong physical strength, suspension of vacation in emergency situations, and dangerous work. The researcher also points out three characteristics of uniformed organizations, including firefighting organizations: 1) uniformed organizations value the communal life within an organization, 2) the organizations have a culture that emphasizes hierarchy, and 3) they emphasize the compliance to a chain of command in a top down style, and they value discipline and control. Schaenman (1996) also found in his research that the firefighter's

culture is characterized by adventure, adversity, commitment, common experience, pride, and close relationships.

Some researchers argue that firefighting organizations mostly consist of men (by NFPA 2019 Research, 7% among firefighters and 4% among career firefighters were female firefighters in 2017), and their main cultural characteristic is masculinity (Baigent, 2001; Soeters, 2000; Thurnell-Read and Parker, 2008; Yarnal et al., 2004). This masculinity leads to taking risks, more acts of bravery, building body strength, and heroism (Baigent, 2001; Thurnell-Read and Parker, 2008). In addition, the male firefighters form strong informal hierarchies within a fire department through which experienced firefighters teach their firefighting skills and knowledge to young firefighters (Baigent, 2001). The strong informal hierarchy and masculinity make the fire service a closed and conservative organization (Baigent, 2001). According to Baigent (2001), most firefighters feel significant pressure to fit into the mainstream culture by informal hierarchy. There are five cultural characteristics of firefighters' interaction activities: 1) the rejection of people with different ideas, 2) the rejection of people who do not follow the organization, 3) the rejection of people with a different culture from mainstream culture, 4) the exclusion of outsiders, and 5) continuous bullying (Baigent 2001; USFA, 2015). In addition, Yarnal et al. (2004) maintain that firefighting organizations have had two main characteristics since 150 years ago: 1) citizens tend to connect firefighters with masculinity, heroism and morality, and 2) there are intimate attachments between firefighters.

Firefighting organizations have been significantly influenced by military systems; therefore, some scholars consider a fire department as a paramilitary organization (Yarnal

et al., 2004). Archer (1999) claims that firefighting organizations have considerably hierarchical and authoritarian cultural characteristics. The county of Fairfax, Virginia investigated the organizational climate of the Fairfax County Fire and Rescue Department in 2017. The county found five main factors that impact the organizational culture: 1) strong dedication, pride, and job satisfaction, 2) poor leadership at the senior level, 3) harassment, bullying and discrimination, 4) conflict among career firefighters, volunteers, civilian personnel, and EMS, and 5) improper hiring and promotional process.

Firefighting jobs are inherently dangerous. However, the degree of exposure to such risks depends on firefighters' decisions and actions; their decisions and actions are greatly influenced by the culture of the fire service (USFA, 2015). The death of firefighters is closely linked to the culture and insecure practices of firefighting organizations that do not place full emphasis on safety (USFA, 2015). Through the literature review, the researcher identified three characteristics in the firefighting organizational culture that have a great influence on firefighters' behavior on the ground: 1) heroism, 2) aggressive and improper firefighting strategies and activities, and 3) the resistance to change.

Heroism

Some people become firefighters to help citizens and society. There are other people attracted by the adventure and thrill of firefighting, while there are also those who enter the fire department encouraged by the image of a heroic firefighter (Fender, 2003). The culture of firefighting organizations and the public image of firefighters can be characterized by altruistic heroism. Heroism is a value that makes firefighters take risks and dedicate themselves to their job. Heroism is also a way of thinking and a basic

assumption widely shared by members within the fire service (Rothmeier, 2017). Heroic

activity means behavior that takes risks for the life and property of others (Cox, 2012).

Heroism features bravery, loyalty, and self-sacrifice. Courage and fearlessness are

traditionally one of the key elements of fire service culture in the US (Cox, 2012).

Firefighters try to be prepared to immediately cope with emergency situations under any

circumstances and sacrifice themselves to save the lives and property of citizens; this

attitude of firefighters is taken for granted by heroism within the firefighting

organizational culture (USFA, 2015).

In addition, all firefighters who die in the line of duty are subject to praise as

heroes; on the other hand, firefighters who follow safety regulations in an emergency are

considered cowards (USFA, 2015). Many firefighters have a belief that dying during field

work is honorable and worthwhile part of their job (Cox, 2012). Because the culture of

the fire department is based on pride and bravery, firefighters are reluctant to hesitate at

the scene and ask for help. In addition, governments and citizens expect firefighters to act

like heroes in emergency situations (Couper and Karimi, 2013). McNamee (2001) points

out firefighters traditionally do not complain about injuries while on duty because they

think it's shameful. Therefore, firefighters are willing to take high risks and violate their

safety regulations to save lives of citizens (Fender, 2003).

Firefighters have great pride in their work and their value, which can lead to

dangerous behavior (Cox, 2012; Fender, 2003; Thurnell-Read and Parker, 2008).

Siarnicki and Gist (2010) found that firefighting organizations value honor, courage, and

self-sacrifice, and firefighters sometimes take excessive risks in the field for their value.

They also pointed out that courage and heroism tend to be linked to danger. According to

Reinhardt-Klein (2010), firefighters have the culture that emphasizes heroism and bravado rather than the safety of firefighters. Cultures that emphasize heroism and bravado lead firefighters to neglect safety procedures; leaders of the fire department view this cultural feature as one of the main causes of firefighter deaths (Reinhardt-Klein, 2010). Many citizens and firefighting organizations have a heroic image of firefighters. This image is reinforced through broadcast media such as TV shows, the news, and movies. For example, on September 11, 2001, terrorist attacks played an important role in strengthening the image of a heroic firefighter with self-sacrifice and bravery through the media for several months (Yarnal et al., 2004). This social image encourages firefighters to actively engage in dangerous behavior (Reinhardt-Klein, 2010).

Svensson (2008) argues public expectations as an important factor of firefighters' bold activities. Firefighters are aware of the public's attention and eyes at most accident sites, and they are therefore more aggressive and take risks when citizens are watching their firefighting or rescue activities. As a result, it contributes to the formation of a heroic image of a firefighter who sacrifices himself for the citizen. Whenever citizens cannot treat an emergency situation themselves, firefighters help the citizens at any time. Citizens think of firefighters as heroes and firefighters are influenced by such thoughts of citizens. As a result, firefighters try to meet the expectations of citizens and act as heroes (Baigent, 2001). When a firefighter dies in the field, the fire department holds a huge funeral ceremony and makes them heroes, regardless of the cause of death. Young firefighters are encouraged by such rituals to act more aggressively and heroically in the field (Clark, 2011). In addition, older firefighters tell younger firefighters about heroic

activities of past firefighters, and the younger firefighters are greatly influenced by the stories (Cox, 2012).

According to Clark (2011), firefighters have focused on six values since the creation of the fire department in the United States: 'fast', 'close', 'wet', 'risk', 'injury' and 'death'. Specifically, 1) 'fast' means firefighters must arrive at the scene as soon as possible to extinguish the fire; 2) 'close' indicates fire suppression should be carried out as close as possible; 3) 'wet' signifies water must be sprayed to wet the fire site; 4) 'risk' means firefighters take risks to save the lives of citizens; 5) 'injury' indicates the injury of a firefighter is part of the job; and 6) 'death' means firefighters may face death during their work (Firehouse.com, 2012). These values have had a great impact on the heroic actions of firefighters that put them at risk.

Aggressive and Improper Firefighting Strategies and Activities

The main goal of the firefighting organization is to save lives and property of citizens quickly in an emergency situation (USFA, 2015). To achieve this goal, firefighters sometimes adopt and conduct extremely aggressive and inappropriate firefighting strategies and activities in the field. Typical examples of such activities are unnecessary offensive tactics and freelancing. Unnecessary offensive tactics refer to conducting aggressive activities when defensive tactics are needed. Also, freelancing means that firefighters act independently without reporting to the commander (Fresno Fire Department, 2015). These activities are likely to lead to firefighters' injuries and deaths. For example, according to the Phase II report, which investigated the deaths of nine firefighters that died in a fire in Charleston in 2007, the cause of the deaths was inadequate incident command procedures and the use of inadequate equipment (Laws,

2008). The standard rules were not followed during firefighting. In addition, the Charleston Fire Department continued to conduct aggressive tactics even when defensive strategies were required (Laws, 2008). After reviewing the NIOSH survey, Kunadharaju et al. (2011) also found that from 2004 to 2009, one of the main causes of firefighter death was an improper incident command procedure. Moore-Merrell et al. (2008) identified that inappropriate behavior and human error accounted for more than 70% among the causes of firefighters' injuries in the line of duty.

According to Reinhardt-Klein (2010), firefighters are aggressively engaged in on-site activities due to peer pressure and erroneous practices. In addition, experienced officers sometimes require firefighters to do very aggressive and possibly dangerous activities based on their experience (McCarl, 1985, p. 127). There is an atmosphere to hurry the actions of firefighters at the fire scene, which can put firefighters at risk (Fresno Fire Department, 2015). According to Cox (2012), it is common for firefighters to do aggressive activities on the fire ground and firefighters frequently take action first before they think. This continuous behavior may be the result of the characteristics of the fire service culture. If a firefighter acts more aggressively in the field, the firefighter will receive more affection and respect from colleagues (McCarl, 1985, p. 97). Younger firefighters may recklessly participate in firefighting because they believe their brave and aggressive activities will be positively recognized by fellow firefighters (Baigent, 2001).

The Resistance to Change

Resistance to change is one of the main characteristics of the firefighting organizational culture (Rothmeier, 2017; Thurnell-Read and Parker, 2008; USFA, 2015). According to Smeby (2013), change is inevitable for an organization to survive and

evolve, and changes in organizational culture improve service quality and performance. The quality of firefighting services cannot be improved unless the organization tries to make changes. Therefore, leaders should try to change the organization. However, changes that attempt to modify the organization's existing main values tend to face strong resistance (Lucas and Kline, 2008). Pessemier (2008) found that attempts to build a safety culture can cause conflict with the fire department's goals and values that protect the lives and property of citizens. To reduce firefighters' death and injury, some firefighting leaders have tried to change the organizational culture and wrong practices. However, these efforts often are confronted with members' resistance and conflicted with existing cultural values (USFA, 2015).

The attempts to change often face strong barriers within the organization. The main barriers within an organization are tradition, the resistance of members, and lack of resources (Smeby, 2013). Firefighters are likely to resist the changes that force them out of comfortable and familiar environments (Cox, 2012). Some members of the organization view change as a threat to their comfortable and predictable life. Change may also make members feel afraid of being deprived of traditional privileges; those with long careers have a stronger tendency to resist change (Smeby, 2013).

Firefighters take their traditions seriously. Their inclination is well embodied in the slogan "long tradition is not disturbed by development and change"; therefore, they tend to be reluctant to change the value of the organization (Rothmeier, 2017). Firefighters, at field level, depend on existing culture and traditions of fire departments, rather than on official policies. Therefore, they tend to resist change against tradition (Fresno Fire Department, 2015). Pessemier (2008) also points out that the narcissism of

firefighting organizations hinders building an effective safety management system. Narcissism means that organizations and individuals have a very high level of pride. The narcissism of firefighters can cause the resistance to changing existing culture. The strong self-esteem of the members of the organization also serves as a strong resistance to changes that are against their organizational identity (Pessemier, 2008).

Fire departments usually develop an informal hierarchy through the transfer of knowledge and skills between co-workers (Baigent, 2001; Cox, 2012). Firefighters with long experience are unofficial power brokers in the firefighting organizations (Cox, 2012). The informal hierarchy may act as the resistance to change by formal and official hierarchy (Baigent, 2001). Firefighting organizations value close relationships among members (Buck et al., 2006; USFA, 2015). Firefighters think their job provides a bond with colleagues (Baigent, 2001) and the bond is strengthened as they experience dangerous situations together (Yarnal et al., 2004). Thus, they strongly resist changes that might break the close-knit culture.

As mentioned above, firefighting organizations are a paramilitary organization and have considerably hierarchical and authoritarian cultural characteristics (Archer, 1999). In addition, fire departments are conservative and closed organizations. Cultural change in paramilitary organizations is harder than in other organizations (County of Fairfax, 2017). Attempts to change something within the fire department usually are done in a top-down fashion by leaders. In the top-down approach, attempts to introduce new policies and changes to the organization tend to face more resistance from members than in the bottom-up approach (USFA, 2015). Therefore, according to USFA (2015), in order to reduce resistance to changes in firefighting organizations, leaders must persuade their

members that the safety of firefighters is very important, and building a safety culture will not reduce the quality of fire service.

Firefighting organizations are male-oriented organizations that emphasize masculinity. Masculinity is associated with bravery and taking risks (Baigent, 2001). So if someone tries to make a change against the value of masculinity, they will face strong resistance. For example, the introduction of a breathing apparatus (BA) initially faced passive resistance from firefighters. Because firefighters thought that the use of BA would reduce the opportunity to show the firefighters' masculinity as a dangerous "smoke-eater" at the fire scene (Baigent, 2001).

Based on the previous discussions, I propose a research question: how does firefighting culture influence fire grounds operations? To ask this question, I utilize a qualitative approach: qualitative interviews via the Qualtrics Online Survey Software to all students in the Oklahoma State University's Fire and Emergency Management Administration Program (FEMP). I will explain more details of using this method in the coming section.

CHAPTER III

METHODOLOGY

The present research uses qualitative approach to investigate how the fire service culture affects firefighters' safety on the fire ground. The reason is that this research is exploring the "how" questions. That is, a qualitative method is an approach to the "how" and "why" questions, while a quantitative method is about the "what" questions; in addition, qualitative research gives us deep understanding of phenomena or cases, and allows us to understand the meaning behind it (Lune and Berg 2016, p. 12). Specifically, a web-based questionnaire survey that consisted of open-ended questions was adopted as the way to collect data. The survey was administered via the Qualtrics online survey software (see www.qualtrics.com for further information). Data from ten firefighters was collected from September 24, 2019 to October 9, 2019. To analyze the data, the qualitative content analysis methodology was utilized.

Participants

The target population of this research was active firefighters. In order to get participant in this research, a convenience sampling and a snowball sampling were utilized. More specifically, researchers sent an email with the survey link to graduate students and some alumni of FEMP at Oklahoma State University (OSU). When sending an email, researchers asked only active firefighters to respond to the survey. Two of respondents forwarded the email to other firefighters. Also, we emailed 11 instructors of

OSU Fire Service Training, active firefighters, with the introduction of my Korean

firefighter colleagues who were training there at the time. From September 24, 2019 to

October 9, 2019, 14 firefighters responded to the questionnaire. However, there were four

missing data. That is, four respondents did not complete the questionnaire to the end.

Therefore, ten completed questionnaires were used as data for research analysis.

Procedure and Measure

Before researchers collected data, this research was reviewed and approved by the

Institutional Review Board (IRB) at OSU for the protection of human research

participants (see Appendix A for the approval letter from the OSU-IRB). Data were

collected in the period from September 24, 2019 to October 9, 2019. The survey

consisted of 13 open-ended questions and 2 closed-ended questions (see Appendix B for

the interview questions). These questions were emailed to target population with an

internet-based link. Before respondents participated in the online survey, they were asked

to confirm the informed consent form and to contact researchers if they had any questions

about this research. In the email, the researchers also informed the target population that

the participation in this research is voluntary and all responses were received by the

researchers as anonymous data. People who agreed to participate in this research were

asked to click through to the next page on the electronic questionnaire to confirm their

consent.

The questionnaire was created based on three cultural factors that influence the

safety of firefighters on the fire ground derived from literature review: 1) culture of being

a hero; 2) aggressive and improper firefighting strategies; and 3) the resistance to change.

Hence, the questions are categorized into three areas below.

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Culture of Being a Hero

Respondents were asked about the "hero" culture: 1) pros and cons of the public image of treating firefighters as heroes; 2) an example to illustrate how firefighters act like heroes; and 3) impact of the "hero" culture on the fire ground operations.

Aggressive and Improper Firefighting Strategies

Respondents were asked about aggressive and improper firefighting strategies: 1) a case about aggressive firefighting activities on the ground by firefighters to quickly complete their mission; 2) the reason why firefighters engage in aggressive activities; and 3) compliance with SOPs in the line of duty.

The Resistance to Change.

Respondents were asked about the resistance to change: 1) recent major changes in their fire department; 2) an example of the resistance from firefighters to changes; and 3) the reason why firefighters resist change. Finally, participants were asked if they wanted to add something to hero culture or change culture in the fire department.

Survey Methodology

In this qualitative research, open-ended survey questionnaires were utilized to collect data for understanding the organizational culture in the fire departments. The questionnaire survey consisting of open-ended questions can provide researchers with rich and qualitative information from respondents (Hyman and Sierra, 2016). In addition, open-ended survey questionnaires enable respondents to tell their thoughts freely without being affected by the investigators (Foddy, 1993, p. 127). According to Reja et al. (2003), in the open-ended questionnaires, respondents can answer in their own words and offer

information spontaneously; thus respondents can avoid the prejudice that may be influenced by researchers. However, responding to open-ended questionnaires is more time-consuming and more items tend not to be answered in the open-ended survey questions than in the closed-ended questionnaires (Reja et al., 2003). The measurement errors in the open-ended questionnaires, on the other hand, tend to be considerably smaller (Reja et al., 2003).

The web-based survey was run through the Qualtrics survey software. Qualtrics is a web-based survey tool to do survey research and data collection activities; this software was used to create surveys, distribute questionnaires, and analyze responses (Ginsberg, 2011). Qualtrics ensures anonymity through an anonymous link where no personal information, such as email address and name, is collected unless asked to do so by surveys (see www.qualtrics.com for further information). A web-based survey including Qualtrics allows researchers to collect data from large population distributed in various areas via internet; it is also time saving and cost-effective for researchers (Regmi et al., 2016). Through a web-based survey, researchers can collect data from inaccessible people like gays and lesbians because an online survey can be sent to diverse social media and web-pages that they use (Regmi et al., 2016). However, conducting a web-based survey has several unique ethical issues: 1) it is impossible to obtain the verbal consent for participation in the research from participants; 2) there is worry about the ability of online software to deal with privacy and confidentiality (Regmi at al., 2016). In addition, an online survey may not be practical for some people who have difficulty accessing the Internet (Ruel et al., 2016, p. 176).

Analysis

The content analysis method was employed as a way to analyze data obtained from open-ended survey questionnaires. The content analysis is a qualitative research method for subjectively interpreting the data contents through text categorization and classification (Hsieh and Shannon, 2005). That is, the text is coded and classified into categories in this analysis method. Through literature review, the researchers selected "hero", "aggressive firefighting activities", and "the resistance to change" as key themes for the initial categories. As data analysis proceeded, initial coding categories were further categorized into many sub-categories. In chapter 4, more details on analyzing data will be discussed.

Limitations

Based on the previous discussions, this research consequently has some limitations: 1) results of this research cannot be generalized and applied to all firefighters, and 2) answers from interviewees (or survey takers) were brief. First of all, the researchers did not randomly select the samples (interviewees) and collect their demographic information, so the results cannot represent the general firefighting population in the U.S. For example, firefighters may differ in how they accept and handle fire service culture based on rank, age, and gender. Therefore, comparing research findings by rank, age, and gender can help to establish a more accurate perception of fire department culture and measures to improve fire service culture. Also, due to the nature of web-based surveys, interviewees usually provide relatively brief answers to the questions asked. Therefore, it might be difficult for researchers to identify the implications behind the answers.

Delimitation

To improve these limitations, researchers sought to identify the fire department's culture by reviewing previous research and government reports alongside survey analysis. The literature and discussions not only guide the development of codes but also enrich the discussions on how firefighters' culture influences their operations and safety. Although results of this research cannot be generalized, this research can serve as a pilot study that explores the relationship between major factors (heroism, aggressive and improper activities, and resistance to change) and firefighter safeties. Consequently, more research is needed in the future to further the discussions, suggestions, and conclusions of this research.

CHAPTER IV

ANALYSIS

As mentioned previously, interview questions were sent to all FEMP students, some alumni, and some instructors of OSU Fire Service Training to collect their responses. Ten completed responses were finally received. All of these responses were first projected in an Excel sheet and then arranged into a Word document for further analysis. To analyze the qualitative data, I first read all of survey responses to develop the data driven codes. Through the reading process, I sought patterns, themes, and concepts which are repeated in the data. As a result, five concepts were coded as the initial categories: "heroism", "conducting aggressive actions", "resistance to change", "other culture", and "suggestions". As data analysis continued, the initial categories were further classified into 12 sub-categories (see Appendix C for data-driven codes, their descriptions, categories, and themes). Then, the relationship between each code was reviewed. The software, Atlas.ti, was utilized to connect those codes to the concepts, themes, and ideas found from the qualitative data. In this chapter, these common themes and concepts derived from the data will be discussed.

Heroism

Not all interviewees observe that heroism exists within their fire department. As an interviewee says: "I don't think anyone in the fire service likes being called a hero. It's

just our jobs to do what we do. I don't think being a hero influences the fire ground operations because no one acts like one." When asking about the pros and cons of being treated as heroes in communities, however, the majority of interviewees did recognize this public image creates certain influences, both positive and negative, to their firefighting jobs.

On one hand, the positive public image builds trust and relationships between firefighters and citizens. As an interviewee mentions: "Going out in public helps firefighters be respected and when firefighters tell people to do something they tend to listen." As a result, having the positive images from the public becomes an important mission in certain fire departments, as another firefighter says: "Hero culture is partly due to the desire to strive for excellence. Being excellent is exceeding low expectations, meeting high expectation or overcoming adversity while performing job duties." Consequently, it comes with more expectations and stress on completing firefighting tasks, as an interviewee notes: "Our department strives to give the highest level of customer service." From another firefighter's perspective, being a hero, although is beneficial for firefighters, also provides "[…] a pride and appreciation that is necessary for those who may be faced with challenging and dangerous situations."

On the other hand, the higher expectations from both the public and fire departments cause some challenges for firefighters. Along with the pride, comes coping with the challenging and dangerous situations as an interviewee also notes: "It [the sense of being a hero] may cause some [firefighters] to ignore their own safety in an effort to meet what is expected." Another interviewee further explains this concept by saying: "That being said, there are extreme situations where firefighters may ignore the IC

[Incident Commander] in order to achieve a heroic outcome. Especially, when children are involved." A firefighter says, "Some firefighters may seek to perform tasks wherein a higher degree of risk is inherent. This can lead to injuries or deaths." Therefore, we find that firefighters conduct aggressive actions on the ground although not all realize the influence from the heroism mindset.

Aggressive Actions

Although the data does not demonstrate the relationships between heroism and conducting aggressive actions on the ground, this research observes firefighters conducting aggressive actions as common in fire ground operations. For example, an interviewee says: "Aggressive firefighting is a cultural norm for most firefighters. The time-sensitive nature of fires requires aggression." In this interview data, reasons for conducting these aggressive activities are: 1) underestimation of the risks on the fire ground, 2) the belief that these actions can effectively save lives and properties of people, and 3) the need to improvise to adapt to environmental changes.

First of all, firefighters with less experience in firefighting operations might underestimate the risks on the fire ground. As an interviewee says: "it is common for young and inexperienced firefighters to choose aggressive tactics when a more conservative tactic is warranted." In addition, older firefighters may underestimate the risks on the ground because of their strong confidence in their experience and ability as an interviewee mentions: "they have accepted to risk and are over confident in their abilities."

Secondly, firefighters with experience, although they are familiar with some risks on the ground, also believe aggressive actions can bring better outcomes for citizens'

property and life protections. An interviewee says about the belief: "aggressive tactics can reduce the amount of damage that occurs as a result of a fire." One of the common beliefs in the fire services, according to a firefighter in this research, is "the longer it [fire] takes, the greater the loss. Get it out quickly […] risk a little to save a little, risk a lot to save a lot." As a result, quick response sometimes takes priority over the importance of safety on the ground. An interviewee, for instance, provided an example to illustrate this firefighting culture: "A captain I had started yelling while a fellow firefighter and I were making sure the hose was set up so we could have a successful attack. The captain comes from an ideologue of aggressiveness and no real tactics with hoses. This comes from my department's old mentality and culture from the 80's and 90's."

The other reason for firefighters conducting aggressive actions is due to the changing environments. Although the majority of fire departments have SOPs, interviewees think "Emergencies almost never meet expectations. Every situation is different and factors such as personnel, resource available, and changing conditions dictate actions rather than SOPs," and "while the SOP's are usually followed on the radio, most do extra tasks that they feel are necessary to complete the job […] we know firefighters are doing things out of the SOP's, but it has become culturally accepted." Therefore, instead of changing these SOPs, firefighters improvise on the ground to "adapt to the situation they are in." This fact shows the complexity of firefighting missions— firefighters need standardized rules to complete their missions, but they also need flexibility on choosing tactics on the ground. Not changing those SOPs and methods of completing missions are also connected to their mindset of resisting changes.

Resistance to Change

As mentioned previously, fire departments rely on the older members to teach new firefighters the established principles and SOPs, so the fire department can provide consistent services to the citizens. However, this method strengthens the influence of older firefighters on younger firefighters, and also hampers the changes occurring in a fire department. As an interviewee mentions:

"Firefighting is a traditional organization that dates back almost to the beginning of the United States. Each new generation of firefighters is taught by the previous generation(s). If these previous generations have not been taught a new way to perform the same task, the new generation is not going to learn the new way. Further, as the older generations tend to serve as company commanders and mentors, the new generation has an expectation that they will perform as they are directed."

Some interviewees say about the resistance of older firefighters: "The senior, older firefighters are resistant to change," and "the majority of them [people who resist change] are elder firefighters." Another interviewee further explains: "Because change is difficult. you have to re-learn a new way. you get comfortable and confident in the way you have been doing things and you have to get comfortable with it [new way]." While another firefighter also tells us about the resistance: "They have their own experiences, and believe it is better than the changes." Therefore, senior firefighters are less likely to accept changes, because they have learned and experienced more traditional methods on completing certain tasks.

Another reason for firefighters resisting changes is the lack of communication. As a firefighter says: "Mis-information. When administrators fail to communicate the reason

for change, resistance is usually high. The inverse is also true. When communication is good, change is more accepted." Without communication on why and how to make changes, firefighters do not feel these changes will facilitate their jobs, but more to fulfill unrelated purposes, as an interviewee mentions: "if firefighters think the change is political or only intended to make an administrator look good, they will resist."

Another firefighter also states the importance of communication: "there is no reason to change, if it is only to change. Change must be justified with science or proven techniques […] and you have to get warriors [firefighters] buy-in for change […] the change process often loses its momentum due to lack of communication from admin and buy-in from the guys, because no one is on the same page."

These facts also echo with the literature on change management and how to overcome those resistances to changes. According to Hayes (2002, p.106), the members within an organization have different influences and powers on each other. Members with relatively strong power may feel that change threatens their existing rights (Hayes, 2002, p. 106). Thus, all firefighters should not be treated in the same way in change management. In addition, the most common reason for failing to change an organization is lack of communication and collaboration among its members (Clement, 1994; Hayes, 2002, p.114; Smith, 2003). More specifically, some change efforts fail due to the appearance of negative and incorrect rumors, which is caused by managers' negligence in communication (Clement, 1994). Another reason is because of the failure in leadership (Clement, 1994; Smith, 2003). In change management, leadership acts as building a vision and motivating its members to reach it (Hayes, 2002, p. 113).

CHAPTER V

CONCLUSIONS AND SUGGESTIONS

Based on the previous discussions, this research concludes that cultural issues influence firefighting operations and thus it impacts firefighters' safety. In addition, the present research provides some suggestions to mitigate the impacts from those cultural issues. At the end of this section, I also provide suggestions for future research to extend those discussions mentioned in this thesis.

This research suggests three recommendations: 1) establishing effective leadership, 2) recognizing and allowing improvisation, and 3) communicating with members before conducting change.

First, establishing effective leadership would mitigate the impacts of cultural issues in the fire departments because leadership drives the organizational culture, cultural change, and success of an organization (Clement, 1994; County of Fairfax, 2017). Strategies to establish effective leadership include building trust between leaders and employees (Hayes, 2002; Rothmeier, 2017) and supporting the cultural changes in fire departments (County of Fairfax, 2017). In this research, consequently, I suggest to provide continuing education of leaderships to fire officers and also incorporate the leadership assessments (e.g., the ability to interact with fellow firefighters) to the promotional evaluations.

Second, based on the data we collected, improvisation is necessary on the fire ground as an interviewee says: "It is impossible to follow all of the SOPs due to the volatile environments." Researchers also reiterate the importance of recognizing and allowing improvisations on the ground (Bigley and Roberts, 2001; Kendra and Wachtendorf, 2003; Mendonca et al., 2001; Stralen et al., 2018; Wachtendorf, 2004). That is, plans, rules, and procedures cannot anticipate every situation, so knowledge-based improvisation is needed to respond to those situations (Stralen et al., 2018). In addition, improvisation gives responders flexibility to adapt to changing conditions (Wachtendorf, 2004). As a result, I suggest firefighters to recognize and allow improvisations at the scenes of disasters. Firefighting education and training should not only focus on following the SOPs, but also enhancing improvisation, such as encouraging trainees to share their experience with each other and to think about possible strategies and solutions for unexpected situations.

Last but not the least, communication is a key factor of initiating the cultural change process (Clement, 1994; Hayes, 2002; Rothmeier, 2017; Smith, 2003). To facilitate the communication, I suggest firefighting leaders to utilize those change management strategies proposed by researchers. Involving employees in the planning processes, for example, would motivate all members to accept the changes (Alvesson and Sveningsson, 2015, p. 32; Hayes, 2002, p. 140). I also suggest, based on the data collected in this research, fire officers should better communicate with firefighters on the scope of change, possible outcomes, and the benefits of conducting a change. As interviewees mention in this research: if firefighters do not feel the change is necessary, they would not follow these polices. Therefore, I suggest managers explain to employees

about why our organization has to change, and give them those required skills to decrease anxiety for change.

As noted previously, this study has two limitations: 1) samples in this research were not randomly chosen, nor was demographic information collected, and 2) a web-based survey was adopted to collect data, which relies on the voluntary responses and therefore might provide less data and short answers than in-depth qualitative interviews. Based on these limitations, I suggest future research on this topic by: 1) utilizing mixed methods to further explore the interplay between organizational culture and other factors, and 2) conducting face-to-face and in-depth interviews to expand those discussions in this thesis.

First, future researchers can add quantitative methods to this research to explore how different factors, such as demographic characteristics, might impact those findings in the research. Through literature review and data analysis, we found that older firefighters are more likely to resist change than younger firefighters. This means that firefighters' culture or mindset may differ based on rank, age, and gender. Analyzing demographic characteristics will provide a deeper understanding of how fire service culture is formed and why firefighters resist change.

Also, I suggest researchers conducting face-to-face and in-depth qualitative interviews in the future to obtain richer and deeper responses on those questions I asked (Lune and Berg, 2016, p. 70). In addition, I also suggest conducting several interviews over a period of time for similar groups of interviewees (e.g., same fire department). Since cultural issues and changes would impact an organization for a long time, one

interview only reflects a segment of the changing processes and thus might not grasp the

whole picture of how cultural issues influence firefighters' safety.

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APPENDICES

Appendix A. Approval Letter from the OSU-IRB

Oklahoma State University Institutional Review Board

Application Number:	EN-19-14
Proposal Title:	Culture Shock: Cultural factors that Kill Firefighters on the Ground
Principal Investigator:	Yang Kil Jung
Co-Investigator(s):	
Faculty Adviser:	Haley Murphy
Project Coordinator:	
Research Assistant(s):	

Status Recommended by Reviewer(s): Approved

Study Review Level:	Exempt
Modification Approval Date:	09/23/2019

The modification of the IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46. The original expiration date of the protocol has not changed.

Modifications Approved:
Modifications Approved: add snowball and email recruitment and add an anonymous Qualtrics survey.

The final versions of any recruitment, consent and assent documents bearing the IRB approval stamp are available for download from IRBManager. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:
1. Conduct this study exactly as it has been approved.
2. Submit a status report to the IRB when requested
3. Promptly report to the IRB any harm experienced by a participant that is both unanticipated and related per IRB policy.
4. Maintain accurate and complete study records for evaluation by the OSU IRB and, if applicable, inspection by regulatory agencies and/or the study sponsor.
5. Notify the IRB office when your research project is complete or when you are no longer affiliated with Oklahoma State University.

Sincerely,

Oklahoma State University IRB
223 Scott Hall, Stillwater, OK 74078
Website: https://irb.okstate.edu/
Ph: 405-744-3377 | Fax: 405-744-4335| irb@okstate.edu

Appendix B. Interview Questions

Q1: Many public media treat firefighters as heroes. Can you discuss the pros and cons of carrying on this expectation?

Q2: Do many firefighters act like heroes to meet this public image? Yes / No

Q3: Can you give me an example to illustrate how they act like heroes?

Q4: How does the "hero" culture influence the fire ground operations in your department? Can you give an example?

Q5: Do you observe firefighters conducting aggressive firefighting activities on the group to quickly complete their mission? Yes / No

Q6: Can you give me an example?

Q7: Do you have an explanation for why they engage in these activities?

Q8: Do all of the firefighters in your department follow the Standard Operating Procedures (SOPs) to complete their tasks?

Q9: What if the situation is different than their expectations?

Q10: In the past 5 years, has your fire department made any major changes (e.g. change SOPs, update systems)?

Q11: Based on your observation, is there any resistance from your peer firefighters to changes in the department?

Q12: Can you give an example illustrating how they resist change?

Q13: Why do you think firefighters in your department resist change?

Q14: Thank you for your patience and candid answers. We have two final questions. Are there any questions that you think we should have asked about hero culture or change culture in the fire department, but we did not ask?

Q15: Is there anything else you would like to add about hero culture or change culture in the fire service?

Appendix C. Data Driven Codes

Themes	Categories	Codes		Description
Fire service culture	Heroism	1	Pros of being a hero	Benefits of being treated as a hero
		2	Cons of being a hero	Shortcomings of being treated as a hero
		2a	Hesitate to call for help	Firefighters hesitate to ask for help
		3	Heroism is not a major topic	Interviewees think being (or not being) treated as a hero does not influence her/his fire departments' operations
	Conducting aggressive actions	4	Aggressive actions	Firefighters conduct aggressive actions on the ground
		5	Improvisation	Firefighters conduct actions based on the environments
	Resistance to change	6	Do not want to change	Firefighters do not want to change
		7	Willing to change	Firefighters are willing to change
	Other	8	Other cultural issues	Other firefighting cultural issues
Suggestions	Suggestions	9	Fire service administration	Interviewees suggest ways to improve fire service administration
		9a	Improve communication	Interviewees suggest ways to improve fire service administration by improving the communication
		10	Future Research	Interviewees suggest directions of developing this research

VITA

YANG KIL JUNG

Candidate for the Degree of

Master of Science

Thesis: CULTURE SHOCK: CULTURAL FACTORS THAT KILL FIREFIGHTERS ON THE GROUND

Major Field: Fire and Emergency Management

Biographical:

Education:

Completed the requirements for the Master of Science in Fire and Emergency Management at Oklahoma State University, Stillwater, Oklahoma in December, 2019.

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Experience:

Fire Captain of Fire Emergency Center, Siheung Fire Department [Gyeonggi, Korea] 2017-present
Fire Captain of Fire Response Team, Siheung Fire Department [Gyeonggi, Korea] 2013-2016
Lieutenant of Fire Emergency Center, Bucheon Fire Department [Gyeonggi, Korea] 2012-2013
Lieutenant of Disaster Prevention Team, Ansan Fire Department [Gyeonggi, Korea] 2010-2011
Fire Engineer of General Affairs Team, Gwangmyeong Fire Department [Gyeonggi, Korea] 2008-2009
Firefighter of Fire Emergency Center, Gwangmyeong Fire Department [Gyeonggi, Korea] 2006-2008
Firefighter of 119 Rescue Squad, Goyang Fire Department [Gyeonggi, Korea] 2004-2006
Firefighter of Fire Emergency Center, Gwangmyeong Fire Department [Gyeonggi, Korea] 2002-2004