



**UNIVERSITI PUTRA MALAYSIA**

***RELATIONSHIPS BETWEEN TEMPERAMENT, CHARACTER,  
MOTIVATION FOR GAMES AND PROBLEMATIC VIDEO GAME-PLAY  
AMONG ADOLESCENTS IN AHWAZ, IRAN***

**PARVIN MOHAMMADZADEH**

**FEM 2016 40**



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By

**PARVIN MOHAMMADZADEH**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in  
Fulfilment of the Requirement for the Degree of Doctor of Philosophy**

**December 2016**

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## **DEDICATION**

I dedicate my dissertation work to my family and many friends. I have a special feeling of gratitude to my parents, whose words of encouragement, pushing for tenacity, ring in my ears, and to my sister, Sima, who has never left my side and is very special. I also dedicate this dissertation to my many friends who have supported me throughout the process. I will always appreciate all they have done. I dedicate this work and give special thanks to my brothers, especially my wonderful brother Mehdi, for being there for me throughout the entire doctoral program.



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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in Fulfilment of the Requirement for the Degree of Doctor of Philosophy

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By

**PARVIN MOHAMMADZADEH**

December 2016

**Chairman: Mansor Abu Talib, PhD**  
**Faculty: Human Ecology**

The progression of electronic and video games can be a serious threat for children and adolescents and put them at higher risk of addictive behaviour. The aim of this study is examining the moderating effect of gender on temperament, character, motivation of game, and Problematic video game play among adolescents in *Ahwaz*, Iran. A total of 400 adolescents from four boys and eight girls' high schools in eight regions of *Ahwaz* were selected using multistage stratified sampling. Data was collected using a self-administered questionnaire, which included a Problematic Video Game Test (*PVGT*), Temperament-Character Inventory (*TCI*), and Problematic video game play Motivation Scales (*VGMS*). Descriptive statistics were used to describe adolescents' characteristics such as gender and academic levels, motivation of games (*intrinsic motivation, extrinsic motivation, and amotivation*), temperament (*novelty seeking, harm avoidance, reward dependence, and persistence*), character (*self-directedness, self-transcendences, and cooperativeness*), and *Problematic video game play*. Hierarchical regression analyses and post-hoc regression analysis were used to determine the moderating effect. Based on the result, the findings highlighted that gender could moderate the relationships between intrinsic motivation to *know* ( $b=2.32, t=16.148, p<.001$ ), intrinsic motivation *experience, stimulation* ( $b=2.34, t=16.758, p<.001$ ) with Problematic video game play, and additionally, extrinsic motivation *identified* ( $b=2.77, t=19.571, p<.001$ ), extrinsic motivation *introjected* ( $b=2.51, t=16.279, p<.001$ ), extrinsic motivation *external regulation* ( $b=2.36, t=14.566, p<.001$ ), and *amotivation* ( $b=2.17, t=13.475, p<.001$ ) with Problematic video game play. In conclusion, the gender variable could have an impact on six types of motivation associated with games and Problematic video game play, although gender does not have an impact on intrinsic motivation to accomplish. Therefore, the results emphasized gender roles as having moderating effects on the relationships between *intrinsic motivation, extrinsic motivation, and amotivation* with Problematic video game play. In contrast, the results showed that gender did not moderate the relationship between seven dimensions of temperament and character with Problematic video game play, the variable had equal effects on both males and females. In conclusion, although some dimensions of temperament and character correlated with Problematic video game play but motivation of games is main response driver of technology use such as Problematic video game play. Moreover, by using the moderating



effects of gender, the interaction is significant for females who had high intrinsic motivation to know, to experience stimulation, extrinsic motivation to introjected, identified, external regulation and amotivation. The study presents more information about predictive factors of Problematic video game play through focusing on temperament, character, motivation of games, and gender as predictive factors. It shed some light on the impact of gender on Problematic video game play.



Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia Sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**PERKAITAN ANTARA WATAK, PERANGAI, MOTIVASI BERMAIN  
DENGAN PERMASALAHAN BERMAIN PERMAINAN VIDEO DALAM  
KALANGAN REMAJA DI AHWAZ, IRAN**

Oleh

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Disember 2016

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Perkembangan permainan elektronik dan video boleh menjadi ancaman yang serius kepada kanak-kanak dan remaja serta menyebabkan mereka berisiko tinggi terhadap tingkah laku ketagihan. Tujuan kajian ini adalah untuk mengenalpasti kesan penyederhana jantina terhadap perangai, watak, motivasi untuk permainan, dan bermain permainan video dalam kalangan remaja di Ahwaz, Iran. Seramai 400 remaja daripada empat buah sekolah menengah perempuan dan empat buah sekolah menengah lelaki daripada empat zon di Ahwaz, Iran telah dikenalpasti menggunakan persampelan Kaedah persampelan berstrata pelbagai peringkat. Data telah dikumpul menggunakan borang soal-selidik tadbir sendiri yang mengandungi skala pengukuran *Problematic Video Game Test (PVGT)*, *Temperament-Character Inventory (TCI)*, dan *Problematic video game play Motivation Scale (VGMS)*. Statistik deskriptif digunakan untuk memerihalkan ciri-ciri remaja seperti jantina dan tahap akademik, motivasi permainan (motivasi intrinsik, motivasi ekstrinsik, dan *Amotivation*), perangai (*novelty seeking*, menghindari bahaya, *reward dependent*, dan ketekunan), watak (*self-directedness*, *Self-transcendences* dan *cooperativeness*), dan bermain permainan video. Analisis Regresi hierarkikal dan analisis Regresi Post-Hoc telah digunakan untuk menentukan kesan penyederhana. Berdasarkan keputusan analisis, kajian mendapati bahawa jantina mempunyai kesan penyederhana bagi hubungan antara motivasi intrinsik ( $b = 2.32, t = 16,148, p < .001$ ), pengalaman motivasi pengalaman motivasi intrinsik rangsangan ( $b = 2.34, t = 16,758, p < .001$ ) dengan bermain permainan video. Sebagai tambahan jantina turut didapati mempunyai kesan penyederhana terhadap pembolehubah motivasi ekstrinsik ( $b = 2.77, t = 19,571, p < .001$ ), motivasi ekstrinsik *introjected* ( $b = 2.51, t = 16,279, p < .001$ ), peraturan luaran motivasi ekstrinsik ( $b = 2.36, t = 14,566, p < .001$ ), dan *Amotivation* ( $b = 2.17, t = 13,475, p < .001$ ) dengan bermain permainan video. Kesimpulannya, pembolehubah jantina boleh memberi impak kepada enam jenis motivasi yang berkaitan dengan permainan dan bermain permainan video, walaupun jantina tidak mempunyai impak ke atas motivasi *intrinsic to accomplish*. Oleh yang demikian, keputusan mengesahkan peranan jantina mempunyai kesan penyederhana terhadap hubungan antara motivasi intrinsik, motivasi ekstrinsik, dan *Amotivation* dengan bermain permainan video. Sebaliknya, keputusan menunjukkan bahawa jantina tidak mempunyai kesan penyederhana terhadap hubungan tujuh dimensi perangai dan watak dengan bermain permainan video, dan mempunyai kesan yang sama terhadap

lelaki dan perempuan. Kesimpulannya, jantina boleh mempengaruhi hubungan antara motivasi untuk bermain, terutamanya motivasi ekstrinsik dan *Amotivation* dengan bermain permainan video. Kajian ini memberikan lebih maklumat mengenai faktor peramal bermain permainan video melalui tumpuan kepada perangai, watak, motivasi permainan, dan jantina sebagai faktor peramal. Kajian ini memberikan lebih maklumat mengenai faktor peramal bermain permainan video melalui tumpuan kepada perangai, watak, motivasi permainan, dan jantina sebagai faktor peramal. Kajian ini telah memberikan informasi mengenai pengaruh jantina terhadap bermain permainan video. Kajian ini telah memberikan informasi mengenai pengaruh jantina terhadap bermain permainan video.



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## APPROVAL

I certify that a Thesis Examination Committee has met on 22 December 2016 to conduct the final examination of Parvin Mohammad Zadeh on thesis entitled "Relationship between Temperament, Character, Motivation for Games and Problematic Video Game-Play among Adolescents in Ahwaz, Iran" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfillment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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I hereby confirm that:

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## LIST OF ABBREVIATIONS

CO	Cooperativeness
EDA	Exploratory Data Analysis
EM-IDENTIFIED	Extrinsic Motivation Identified
EM-INTROJECTED	Extrinsic Motivation Introjected
HA	Harm Avoidance
IM-EXPERIENCE STIMULATION	Intrinsic Motivation Experience Stimulation
IM-TO ACCOMPLISH	Intrinsic Motivation to Accomplish
IM-TO KNOW	Intrinsic Motivation to Know
NS	Novelty Seeking
P	Persistence
PVGT	Problematic video game play Test
RD	Reward Dependence
SD	Self-Directedness
SDT	Self-Determination Theory
SPSS	Statistical Package for the Social Sciences
ST	Self-Transcendence
TCL	Temperament and Character Inventory (Persian version of Short version of TCI-125-PV)
UTAUT2	Unified Theory of Acceptance and Use of Technology Theory
VGMS	Problematic video game play Motivation Scale



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## CHAPTER 1

### INTRODUCTION

The first chapter of this thesis establishes the background of the present study on Problematic video game play among adolescents in Ahwaz, Iran. Upon revealing issues related to the topic of study, a declaration of the problem statement is presented. Subsequently, research questions and a comprehensive discussion of the theoretical background that guided the study are discussed, followed by the conceptual model specifically designed for the present study. Based on the conceptual model, the study objectives are stated in terms of general and specific objectives. Research hypotheses and a list of definitions for key terminologies relevant to the study are presented at the end of this chapter.

#### 1.1 Background of the Study

Undoubtedly, computer and video games are as attractive phenomenon, which have significant effects on individuals particularly children and adolescents (Shokouhi-Moghaddam, Khezri-Moghadam, Javanmard, Sarmadi-Ansar, Aminae, Shokouhi-Moghaddam, & Zivari-Rahman, 2013). By progressing technology, computer and video games have been utilized in different parts of life such as jobs, studies, social activities (Sharifi Fard, Neshatdoost, Mazaheri, & Talebi, 2013).

Different specialists have stated different benefits of such games, such as leisure filling profits, personal development, educational benefits, challenges, fantasy, and curiosity (O'Neil, Baker, & Fisher 2002). For instance, researchers have utilized computer technology, to continue adolescents and even mature people amused. As a result, video and computer games have been the most beneficial business for capitalists in this emerging market (Loton, 2007). In this field, specialists have quickly improved the quality of their products and have sent new and creative games to the market rapidly. Following this, many players have become interested in creating new technology as a hobby. Unfortunately, many of users and parents stated some problems regarding video games such as, academic failure, stress, conflict, game addiction, violence, and learning disabilities (Shokouhi-Moghadam et al., 2013).

A huge number of studies have considered Problematic effects of video gaming (Cypra, 2005). Based on the frequency of Problematic video game play and Internet use, current studies suggest that the average player spends between 10 and 15 hours per week engaged in playing games (Rideout, Foehr, & Roberts, 2010). Findings of one study showed that participants spend an average of 6.3 hours per week and 47% of participants play games extensively in Iran (Allahverdipour, Moeini, & Hamzei, 2010). Using the Problematic Video Game Test (PVGTT), Sharifi Fard et al., (2013) reported the frequency of computer games and found that 49.82% of participants obtained scores of 20 to 39, 29.44% scored 40 to 69 and 2.3% (up to 70%) on the Problematic video game test (PVGTT).

It appears that the players are capacity to choose not only which game to play but also what to do whereas playing a particularly game. As stated by Apperley (2006), there exist four game genres such as action, role playing, simulation, and strategy. Action games oblige game-play virtuosity as the gamer controls each move of the counter, which regularly are can murder or able to be murdered. Role playing games shaped in pen-and-paper role-playing games and thus, bring a number social and innovative parts as those gamers type and increment a character same time included with genuine or advanced others. Simulation games expect sensible situations for life, economics, also sports. Finally, strategy games include a universal view; for instance, players deal with an economy while battling rivals. The present study has not been investigated to what level players of different game genres vary regarding their personality and motivation of games because the conceptual structure was beyond the scope of the present study, therefore, the genres left out of this study.

Among the different players, it was considered that children and adolescents were engaged in playing video games more than others. Therefore, as children and adolescents participated, it become more critical for understanding the causes behind the involvement to video games. Regarding frequency of video games usage among children and adolescents, researchers have attempted to find causes of having this much curiosity in playing video games. It is of significant importance that video game dependency is one of the most critical dimensions of the psycho-social factors of the issue (Collins, Freeman, & Chamarro-Premuzic, 2012). According to Griffiths and Wood (2005), there are some factors such as biological, psychological, social, structural, and situational characteristics which may combine together to encourage gamers to play video games. Previous studies have suggested that there is a relationship between personality factors such as temperament and character and the tendency to use online games excessively. For instance, Kuss and Griffiths (2012) have shown that introversion, neuroticism, and impulsivity are factors that are related to gaming patterns.

Lang (2006) has conducted research showing that biological differences may influence options associated with media. Huh and Bowman (2008) found that personality factors (i.e., temperament and character) are significantly related to online game playing. Deng and Zhu (2006) have also emphasized many factors such as temperament and character, gender, age, experience, and culture that may affect gaming addiction. The researchers advised that these factors might manipulate gamers' evaluations when a game comes out of a crucial situation. Largely, most of the studies focus on personality factors such as temperament and character, with regard to Internet addiction (Lee, Hong, & Joung, 2007). For instance, a study by Kim, Lee, Han, Suh, and Kee (2006) was conducted, which focused on temperament and genetic polymorphism based on Cloninger's theory of personality in Korean male adolescents with Internet addiction tendency. The results have revealed that novelty seeking (NS) and harm avoidance (HA) scores were significantly higher among adolescents with Internet addiction tendency.

Another study examined Cloninger's theory about Internet addiction and substance use experience and found that high novelty seeking (NS), high harm avoidance (HA), and low reward dependence (RD) were the most important predictors for Internet addiction (Ko, Yen, Chen, Chen, Wu, and Yen, 2006). Therefore, the current study focuses on

temperament and character as one of the two independent variables associated with Problematic video game play.

Moreover, motivation of games might be another variable that encourages engagement with video games and Internet addiction. King and Delfabbro (2009) studied the relationship between motivation and gaming to explain the tendency toward engagement with video games. The results revealed that intrinsic motivation to play video games and amotivation are important factors associated with video games. Based on these studies and the role of motivation of game, the current study attempted to focus on motivation for game playing as a predictable variable which correlates with Problematic video game play.

However, gender is another important issue in Problematic video game play (Wood, 2008). There are many studies that have come to the finding that males play video and computer games more than females. For instance, King, Delfabbro, and Griffiths (2010) reported that males play video games significantly more hours per week than females. Hauge and Gentile (2003) found that video game addiction is considered as a Problematic factor among adolescents, especially for males. Yee (2006) believes that males obtain higher levels of manipulation and achievement, while females have a higher range of response to relationship, immersion, and escapism factors in games than males. According to patterns of home computer and video game use, it was predictable that males spend more time online than females. Even if females and males spent equal amounts of time online, previous research suggested that gamers might display gender-stereotypical preferences in their choices of Internet activity.

Additionally, a considerable gender difference in video games or computer game involvement has been presented indicating that girls and young women display less interest in digital games, have less game-related knowledge, and play less frequently and for shorter durations than boys and young men (Griffiths, Davis, & Chappell, 2003, 2004; Gross, 2004). According to Cherney and London (2006), boys spent most of their leisure time in sports and playing digital games, but girls spent most of their leisure time watching television. In Iran, Amini et al., (2008) have found that males are attracted by video games more than females (48.1% males and 38.9% females).

Conversely, a study by Doost, Mazaheri, and Talebi, (2013) reported that there was no significant difference between girls and boys in digital gaming among 188 adolescents studying in high schools of Dehdasht, located in Iran. McBrom (2013) also found that leisure activity may be influenced by the portrayal of women, with women being an attraction toward video games. In conclusion, the findings indicate the important role of gender on motivation of games. Thus, this study considered gender effects as a moderator variable on the relationship of motivation of games and video games.

## 1.2 Statement of the Problem

Evidences in most countries show that new technology such as computer and video games have lasting influences in person's life. The video game industry obviously has been quite successful in engaging children and adolescents. Recently the designers attempt to create new games for involvement young people specially children and adolescents. Therefore, after television, the video games have been identified as the second common entertainment (Zamani, Chashmi, & Hedayati, 2010). It is also important to note that some of games are more attractive for adolescents. For instance, Massively Multiplayer Online Role-Playing games (MMORPG) and Warcraft (WOW) require engaging to games than others.

Past studies also showed the high frequency of video games in most of countries. For instance, statistics showed that 58% in America (ESA, 2013), 10.8% in China (Lam, Pen, Mai, & Jing, 2010), 8.0% in Australia (Porter, Starcevic, Berle, & Fenech, 2010), 8.7% in Singapore (Choo, et al., 2010) addicted to video games. Previous findings have revealed a higher prevalence of video gaming in Iran. For instance, results of a study by Amini, Amini, Yaghoubi, and Amini (2008) indicated increased Problematic video game play among adolescents in Iran. Findings of this study showed that 53% of the participants were computer game players, and 43% spent more than three hours per week playing games. Amini et al., (2008) also demonstrated that over half Zanjan high school students (53.4%) played video games. Zamani, Chashmi, and Hedayati (2010) stated the reasons for adolescents' attraction to these games include excitement and easy accessibility, while authorities and families do not plan for students' leisure time, and there are not many options for their entertainment.

As a Middle-east country, Iran has different social problems and has become one of the most important concerns among experts. Ahwaz, which is one of the most industrial cities in Iran, has various different kinds of social problems due to certain reasons such as war, several tribes, different cultures and sub cultures; therefore, they make so many problems for the residents of this city. One of the most important reasons that affect on engagement to new technology and media such as playing video game is consideration video games as one the main solution for solving this problem that lead to other personal and social problems for the children and young adults (i.e., addiction and aggressive behaviours) This study hopes to find the reasons of people tendency to using video games. Consequently, based on these observations, performing research on the behaviours of the adolescents in relation to video games to reduce social problems in Ahwaz will be beneficial. Therefore, according to this issue and regarding the few studies in this city, it is considerably important to do the research on this topic. Among different users of these video games it was found that children and adolescents were more interested in playing video games than other age groups (Hauge & Gentile, 2003; Shojaei, Dehdari, Noori Jelyani, & Dowran, 2013). The problems caused by video games among adolescents have increased and the proliferation of electronic and video games has become a serious threat among children and adolescents, and players are becoming a major concern for most of society of Iran (Yasami, Azadi, & Amoei, 2011). Therefore, according to this reason and regarding the few studies in this city, it is considerably important to research this topic. Among the different users of these video games it was found that children and adolescents were more interested in playing video games than other age groups (Hauge & Gentile, 2003; Shojaei, et al., 2013).



Based on the results in many countries especially in Iran, it is essential to understand the causes of engagement to video games. Evidence in most countries shows that identifying the causes of involvement to video gaming might be a crucial need. For instance, existing studies on video game and Internet game addiction (i.e., Ko, Yen, Yen, Chen, Weng, & Chen, 2008) have shown that personality traits factors such as temperament and character affect adolescents' Problematic video game play. Two major independent variables were examined in this study in relation to Problematic video game play. Temperament refers to systems based on activation, inhibition, and maintenance through varying systems, independently (Cloninger, Przybeck & Svrakic, 1991), which is one of the prevailing variables that have been extensively used in social research to represent characteristics of the individual, especially for children and adolescents. Meanwhile, Mochcovitch, Nardi, and Cardoso (2012) defined character as the following: Character defined as a more complex cognitive process that is correlated with semantics or explicit memory. It identified as a rational reorganization of perceptions, and experiences, which transform them into concepts, giving them significance (p.342); therefore, environmental conditions are constantly given attention because of their effects on adolescents' characteristics while communicating in various environments and with others. For analysing aspects of temperament and character, this study attempted to focus on personality trait factors such as temperament and character, based on Cloninger's theory for analysing this problem in Iranian society.

There are several studies which concentrate on causes of existing video gaming behaviour; however, previous studies on this issue have not focused on a theoretical framework such as the psychobiological personality traits and models of temperament and character structures used by Cloninger in Iran. Consideration of this theory could help to identify some personality trait factors such as temperament and character which reflect on Problematic video game play. Since there is an urgent need to focus on ethology strategies, the current study attempted to determine the relationships between temperament, character, and Problematic video game play, based on Cloninger's theory of personality traits. This theory might help in recognizing engagement toward video games to prevent widespread negative outcomes among adolescents. Therefore, the present study adopts a theoretical framework which is based on the investigation concept of temperament and character as theorized by Cloninger (1987) and Cloninger, Svrakic, and Przybeck (1993).

In contrast to the previous discussion, players may motive to play video games. That is, certain motivational factors are influential in getting involved with Problematic video game play more than others. Therefore, motivation is one of the driving forces behind recent research interest in games (Kellar & Watters, 2005). There are several studies that consider motivational roles toward Problematic video game play. For instance, King, and Delfabbro (2009) focused on motivation of games and Problematic video game play and found that all types of motivation of games are positively correlated with Problematic video game play. As discussed earlier, because motivation of games could be a significant factor of tendency to play video games, this variable is chosen as the focus of the recent study.

It is conceivably essential that gender may have an impact on temperament, character, and motivation of game. For instance, studies have applied the gender factor as the

moderating variable in online gaming (Xu, 2014), Internet addiction and online activities (Ko, Yen, Lin, Fen Huang-Yen, 2009), and pathological gaming (Lemmens, Valkenburg, & Peter, 2011). Previous studies indicate that there is also a relationship between gender and Problematic video game play (King & Delfabbro, 2009). Dolatabadi, Eslami, Mostafavi, Hasanzadeh, and Moradi (2013) have also found that there is a significant relationship between gender and computer gaming in Iran. Moreover, the results which are related to temperament, character, and video games confirm the role of gender as the moderating effect on the relationship between temperament, character, and Problematic video game play (Sharifi Fard et al., 2013). Thus, according to previous studies in Iran context, there is a considerable amount of support for the fact that gender differences exist and gender might contribute a moderating role in adolescents' Problematic video game play.

Therefore, evidence presented shows that gender might serve as a key moderating variable that strengthens the effects on the relationship between motivation of game and Problematic video game play according to (Griffiths and Lewis (2011) King and Delfabbro (2009) have concluded that males and females differed on all types of motivation of game such as intrinsic motivation to know, accomplish, experience stimulation, and also extrinsic motivation to interject and identify external regulation and amotivation. Thus, based on the important role of gender on motivation of game, the current study concentrated on the relationship between gender and motivation of games. Nevertheless, whilst demographic variables such as gender have been confirmed to play roles in adolescents' video gaming, a literature review exposes that there is no empirical evidence which considers the relationship between temperament, character, motivation of games and Problematic video game play regarding the moderating effect of gender. The current study bridges a gap in the Problematic video game play by investigating how personality traits such as temperament and character and motivation of games form adolescents' game playing behaviors regarding the moderating effects of gender. Since a large amount of studies on game playing carried out the temperament and character / or motivation of games separately (i.e., King & Delfabbro, 2009; Kim et al,2010) this study continues to be a gap in understanding the relationship between temperament, character, motivation of games and Problematic video game play regarding the moderating effect of gender together.

A better understanding of the moderating effect of gender on the relationship between temperament, character, and motivation of games might help to account for variation in tendency to play video games. Thus, the main concentration and the contribution of current research are to scrutinize the moderating effects of gender on the relationship between temperament, character, motivation of games and Problematic video game play. It is essential to further observe the specific situations under which these moderating effects exist, which is what this study was intended to do. Moreover, based on the above discussion, no study was found that investigated the moderating effects of gender on the relationship between temperament, character, motivation of games, and Problematic video game play in Iran. Therefore; this study provides new insight into Iranian society, and the current study is intended conduct research that satisfies the need to determine the moderating effects of gender in the relationship between temperament, character, motivation of games and Problematic video game play.

In conclusion, children and adolescents are at high risk of addictive tendency to these behaviours (Yasami, Azadi, & Amoei, 2011). These situations may have alarmed their

families, psychologists, and the government, prompting them to pay more attention to the lives of the adolescent generation in Iran. Sometimes adolescents may prefer to visit café game net centres instead of using their PCs and video sets at home (Shojaei, Dehdari, NooriJelyani, & Dowran, 2013), which imposes very dangerous impacts on them because their parents may not have the necessary control over them while the adolescents are at such places (Mohammad Nezhad, 2008). Regarding the frequency of video gaming in Iran, this study attempted to consider this as a problem in this society. Therefore, it was necessary to conduct research in order to gain results pointing to suitable methods for prevention of video game addiction.

This study aims to examine the moderating effects of gender in the Problematic video game play. This empirical study will be gain a more inclusive understanding of Problematic video game play for different gender, and aid service providers to involve more gamers in a targeted manner. Therefore; this study has attempted to investigate the moderating effect of gender on temperament, character, motivation of games, and Problematic video game play.

### **1.3 Research Questions**

Based on the structural relations among the variables, the following research questions were formulated for the present study:

1. What is the participant's demographic background (gender, academic level (first, second, and third), temperament, character, motivation of games and Problematic video game play among adolescents in Ahwaz?
2. Are there any significant differences in Problematic video game play between male and female adolescents in Ahwaz?
3. Is there a relationship between each dimension of temperament, character, types of motivation of games and Problematic video game play among adolescents in Ahwaz?
4. Does gender moderate the relationship between dimensions of temperament, character, types of motivation of games and Problematic video game play among adolescents in Ahwaz?

### **1.4 Theoretical Background**

Various processes have shown to explain how temperament, character, and motivation of games may exert their effects on Problematic video game play. The theoretical framework for current research attempted to consider extend unified theory of acceptance of use technology (UTAUT2) which discussed gender and motivation roles and can effect on use technology such as video games playing. To explain the dimensions of the temperament and character, this study has chosen the Psychological theory of personality based on Cloninger's theory, and finally, to conceptualize of tendency toward Problematic video game play and motivation of games, the self- determination theory (SDT) was applied in this study. Therefore, the current study follows three theories which might conceptualize causes of engagement to Problematic video game play. Both extend unified theory of acceptance of use technology (UTAUT2) and the self-determination theories explain motivation of games.

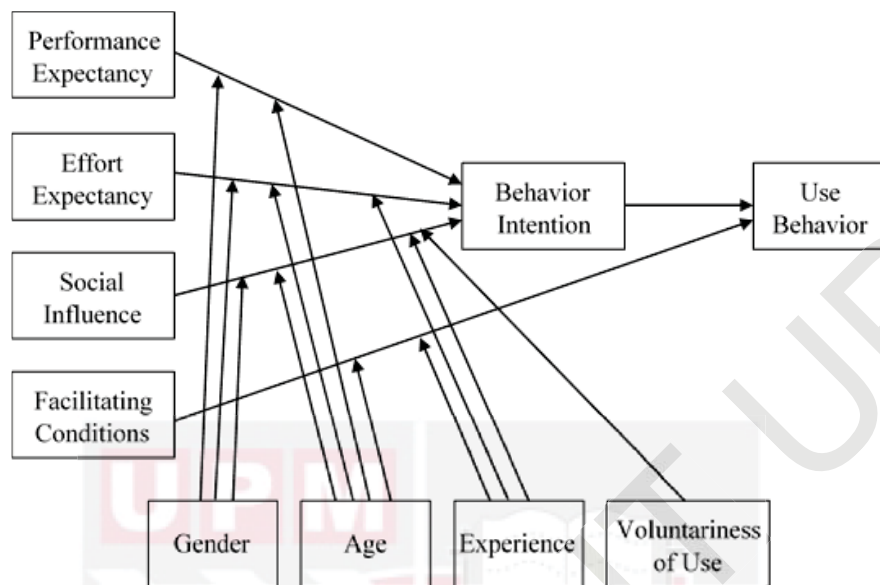


#### **1.4.1 Extension of Unified Theory of Acceptance and Use of Technology Model (UTAUT2)**

The extended unified theory of acceptance and use of technology model (UTAUT2) is an extension and adaptation of the unified theory of acceptance and use of technology model (UTAUT) (Venkatesh, Thong & Xu, 2012). First of all, it is important to explain the UTAUT to better understanding the extension of the unified theory of acceptance and use of technology model (UTAUT2). Most research employing the UTAUT theory was investigations in consumer contexts. Furthermore, the UTAUT has become a popular theoretical choice within the field of information communication (Williams, Rana, Dwivedi, & Lal, 2011). Examples of applications of the UTAUT in consumer contexts include the adoption by users of the following information and communication technologies: mobile banking (Zhou, Lu, & Wang, 2010), mobile phone technologies (Lu, Yao, & Yu, 2005; Park, Yang, & Lehto, 2007; Wang & Wang, 2010), Internet banking (Abu Shanab & Person, 2007; Im, Hong, & Kang, 2011), virtual learning technologies (Chiu & Wang, 2008), and online purchase intention in regard to rural tourism (San Martin & Herrero, 2012).

The UTAUT model has also been applied to technologies such as computer use (Al-Gahtani, Hubona, & Wang, 2007), virtual learning technologies (Van Raaij & Schepers, 2008; Wang, Wu, & Wang, 2009), human resources databases (Eckhardt, Laumer, & Weitzel, 2009), and organizational social networks (Curtis, Edwards, Fraser, Gudelsky, Holmquist, Thornton, & Sweetser, 2010). The UTAUT model focuses on the role gender as a moderating effect in the tendency toward using information technology (Guo, 2014). For instance, Wang and Wang (2010) found that women were more influenced by the ease of using technology than men. Venkatesh et al., (2003) have stated that UTAUT was applied as a model of individual acceptance extended from eight theories and models.

Venkatesh et al., (2003) continued to encourage researchers to validate and test their model in different settings and with a variety of technology applications with the purpose of identifying new constructs that can be used to enhance the body of knowledge to predict information technology intention. After initial validation and publication of the UTAUT, numerous studies reported that existing technology acceptance models did not account for significant predictors of usage (Bagozzi, 2007; Cody-Allen, & Kishore, 2006). Even though the UTAUT provides a very good and detailed model for acceptance and use of technology, it has some limitations (Negahban & Chung, 2014). Moreover, other studies stressed the importance of revalidation and extension (Bagozzi, 2007; Silva, 2007). Figure 1.1, below, presents the concepts of the UTAUT:



**Figure 1.1. Original UTAUT model.**  
 (Adopted from Venkatesh, Morris, Davis and Davis, 2003).

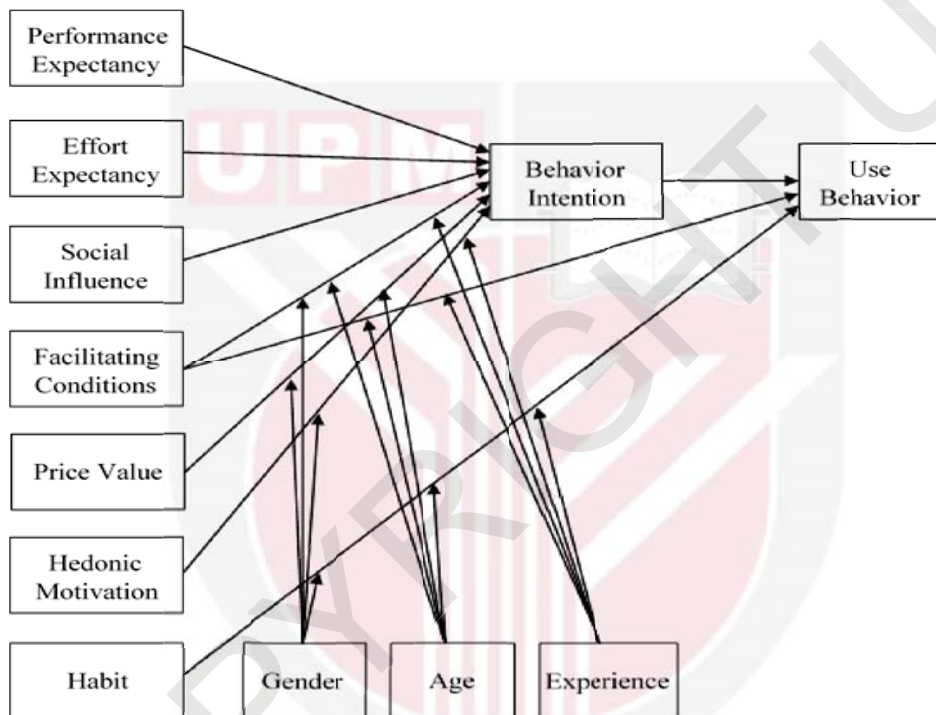
The UTAUT model is not complete since it only takes into account the aspects of extrinsic motivation or utilitarian value of the performance expectancy construct. However, it seems that the incorporation of hedonic or intrinsic motivation complement this model (Venkatesh et al., 2012).

Based on the above figure, the performance expectancy, effort expectancy, social influence, and facilitating conditions are determined as variables which directly correlate with both behaviour intention and use behaviour. The moderating variables that influence the constructs are age, gender, and experience, dropping voluntariness from the previous the UTAUT.

In comparison with the UTAUT, the UTAUT2 model now has seven constructs: (i) performance expectancy, (ii) effort expectancy, (iii) social influence, (iv) facilitating conditions, (v) hedonic motivation, (vi) price value, and (vii) habit (Venkatesh et al., 2012). Three new constructs were added: hedonic motivation due to its inclusion as a key predictor in much earlier research and its importance reported therein (Venkatesh et al., 2003); price because in a consumer context, users must bear the costs associated with the service use; and habit, which was supported in previous studies that showed it to be a critical factor in technology context use (Kim, Malhotra & Narasimhan, 2005; Limayem, Hirt, & Cheung, 2007).

Some studies validate relationships in the UTAUT2 (i.e., Baptista & Oliveira, 2015; Escobar-Rodriguez & Carvajal-Trujillo, 2013, 2014; Pascual-Miguel, Agudo-Peregrina, & Chaparro-Pelaez, 2015). For instance, Yang, chiu, and Chen (2006) investigated the

moderating effects of gender and social influence on attitude, behaviour, and playing online games. According to the results, social influence significantly influenced female college students' attitudes, did but not significantly influences male college students' attitudes toward playing online games. A research on hedonic motivation shows that hedonic motivation has an important influence on technology acceptance and use (Brown & Venkatesh, 2005). The current study focuses on two factors of this study, hedonic motivation and the moderating effects of gender. Hedonic motivation provides pleasure or hobbies for gamers. The gamers are motivated toward Problematic video game play because these games provide pleasure.



**Figure 1.2. The Extension Unified Theory of Acceptance and Use of Technology Model (UTAUT2)**

Comparison between studies in Iran and other countries indicates that the UTAUT2's use in behavioural addiction research in Iran contexts is rather scant. Its application in the social media context, however, is still new and needs further understanding. Therefore, this study aims to contribute to theoretical knowledge in the domain of technology use and Problematic video game play by identifying additional factors relevant to Problematic video game play. Implementation of this added variable approach (Holden & Karsh, 2010) in the present study will help to better understand the factors (i.e., hedonic motivation and gender) predicting Problematic video game play and technology use. Furthermore, facilitating conditions, performance expectancy, price value, trust, and social influence variables are not considered in this study because the conceptual constructs are beyond the scope of the current study.

Moreover, the present study considered this theory as a main theory to support the motivation and gender role related to Problematic video game play. Therefore, other factors were left out of this research. The chief theoretical contribution of this study is confirmation of the moderation effect of gender on the relationship between temperament, character, motivation of game, and Problematic video game play. This theory is useful in understanding the variables that influence intention to use emerging technologies such as Problematic video game play. Identifying individual differences in game motives may be crucial to understanding factors that lead to Problematic video game use.

#### **1.4.2 The Self-Determination Theory (SDT)**

Self-determination theory (SDT) was as a second theory which was proposed by Ryan and Deci (2000) and has recently become one of the most comprehensive and empirically supported theories of motivation. The SDT has been successfully utilized for a variety of topics, including general education (Niemic, Lynch, Vansteenkiste, Bernstein, Deci, & Ryan, 2006), religion (Neyrinck, Vansteenkiste, Lens, Duriez, & Hutsebaut, 2006), physical education (Standage, Duda, & Ntoumanis, 2005), health care (Williams, McGregor, Sharp, Kouides, Levesque, & Ryan, 2006), and Problematic video game play (Gentile, Khoo, Prot, & Anderson, 2014; Hilgard, Engelhardt, & Bartholow, 2013; King & Delfabbro, 2009; Przybylski, Rigby, & Ryan, 2010; Ryan & Deci, 2008).

This theory is presented as a macro theory of personality and motivation relating to individual innate growth predispositions and psychological needs (Deci & Ryan, 2002), or as Fairchild (2005) has argued, it focuses on the innate desire for stimulation and learning which an individual has from birth and supported or discouraged within their environment (Deci & Ryan, 1985, 2000). The SDT considers the causes of the tendencies of individuals for participation, efforts, and insistence in an activity (Peng, Crouse, & Lin, 2012). Deci and Ryan (1985) classified a continuum of self-determination regulation formed by intrinsic and extrinsic motivation and Amotivation. Deci and Ryan (1985) stated that self-determination is a human quality that involves the experience of choice, having choices and making choices.

The SDT has been able to discriminate three kinds of motivation. According to intrinsic motivation, individuals tend to engage in an activity to obtain pleasure or some level of satisfaction resulting from the behaviour itself. Extrinsic motivation is a type of motivation which explains a person's response to external forces such as rewards and punishments. At last, Amotivation refers to absence of motivation or intention (King & Delfabbro, 2009). Based on the games, Malone and Lepper, (1987) have suggested that players typically play because they are intrinsically satisfying.

In study, Problematic video game play and motivation of game were considered within the SDT framework. The nature of one's motivation for Problematic video game play, as postulated by the SDT, may supply a missing and understudied link. Moreover, problem Problematic video games play shows to be a maladaptive motivational consequence. Chantal, Vallerand, and Valleres (1994) stated that players report being extrinsically motivated by introjected (i.e., playing video games for a release of tension

or guilt) identified regulation (i.e., playing for internal values like wanting to be dynamic and important in the eyes of others), and external regulation (i.e., when playing is reinforced by intermittent reward systems within video games). Individual differences in players' motives in video game use may determine that gamers enjoy healthy, balanced game use and that gamers are at risk for pathological game use (Hilgard, Engelhardt, & Bartholow, 2013).

The present study applied a model of motivation for Problematic video game play and provided further support for the theory that motivational orientation may be a key determinant of Problematic behaviour. A better awareness of those motivation factors which underpin excessive playing may enable individuals to manage their Problematic video game play habits to ensure more self-determined and intrinsically rewarding experiences.

### **1.4.3 The Psychological Theory of Personality**

Cloninger's theory was based on learning theory which synthesizes information from genetics such as human, animal, and evolutionary research; psychology such as cognitive psychology, learning theory, psychophysiology, personality theory; and psychiatry, including nosology, psychopharmacology, and longitudinal studies. Based on this information, Cloninger applied the neurobiological term that is grounded by the operant learning model (Cloninger, 1987, 1991) that is divided into temperament and character.

This theory supposes that temperament represents genetic effects, while character reflects environmental effects. The dimensions of temperament are novelty seeking, reward dependence, harm avoidance, and persistence, and the dimensions of character are cooperativeness, self-directedness, and self-transcendence (Saucier & Simonds, 2006). Richter, Brandstrom, Emami, and Ghazinour (2007) conducted a cross-cultural comparison between Europe and Asia, including Iran, Germany, and Sweden, through the use of a temperament and character inventory (TCI). Based on culture, the researchers found that those countries were equally structured based on personality. Additionally, this study stated that temperament and character inventory (TCI) is as an evaluative instrument, which is influenced by variables such as age, gender, and culture.

Miettunen, Veijola, Lauronen, Kantojarvi, and Joukamaa (2007) investigated a meta analytic method for considering sex differences in dimensions of temperament and for identifying the influences of mean age and location. The results showed that woman obtained higher scores in harm avoidance and reward dependence, whereas there were no differences in novelty seeking and persistence regards for the gender variable. The study also revealed that reward dependence was significantly smaller in Asia related to gender. Finally, this study suggested that sex differences should be given attention in future researches.



Cloninger's theory is especially relevant to Problematic video game play for several reasons. First, the behaviours assessed in novelty seeking (NS) sub-dimensions (i.e., exploratory excitability, extravagance, disorderliness), reward dependence (RD) (i.e., openness to warm communication attachment, and dependence), and persistence (P) (i.e., eagerness of effort, work hardened, ambitious, and perfectionist) are conceptually relevant to the initiation and maintenance of video game dependence. For instance, players seeking novelty may show more exploratory excitability, extravagance, and disorderliness and then may experience greater negative affects during Problematic video game play.

Self-directedness (SD) (e.g., responsibility, purposefulness, resourcefulness, self-acceptance, and enlightened second nature) and cooperativeness (CO) (e.g., social acceptance, empathy, helpfulness, compassion, and pure-hearted conscience) correlate with Problematic video game play. For example, players in cooperativeness may show more social acceptance, and therefore, these players may be attracted to video games or players in the way those higher in self-directedness engage toward video games while making effort to regulate insufficient self-directedness. Ahmadi, Amiri, Ghanizadeh, Khademalhosseini, Khademalhosseini, Gholmi, and Shrifian (2014) believed that novelty seeking and self-transcendence are important factors related to Problematic video game play.

Second, the temperament, character inventory measures heritable traits that may indicate relations between genotypes and video games. For instance, Cloninger has found certain relations between various behavioural tendencies and monoaminergic neurotransmission processes (Brändström, 2009). Because of personality factors such as temperament and character, it is reasonable that this stable selection pattern exists. Third, systems involved in processing and responding to appetitive, aversive, and novel stimuli that are related to TCI temperament dimensions may also underlie Problematic video game play.

Similarly, Chaudhri, Caggiula, Donny, Palmatier, and Sved (2006) found these systems can be correlated with smoking addiction. In conclusion, this study is based on investigation of Cloninger's psychobiological model of personality and Problematic video game play. This theory is likely to provide broad insight into a person's personality based on several aspects of analysis, such as the genetics of personality, neurobiological basis of behaviour, cognitive-emotional organization and maturity of personality, behavioural correlate of individual differences in personality dimensions, and personality constellations' interactions (Brändström, 2009). Therefore, in this study, temperament and character were considered as psychobiological constructs within the framework of psychological theory.

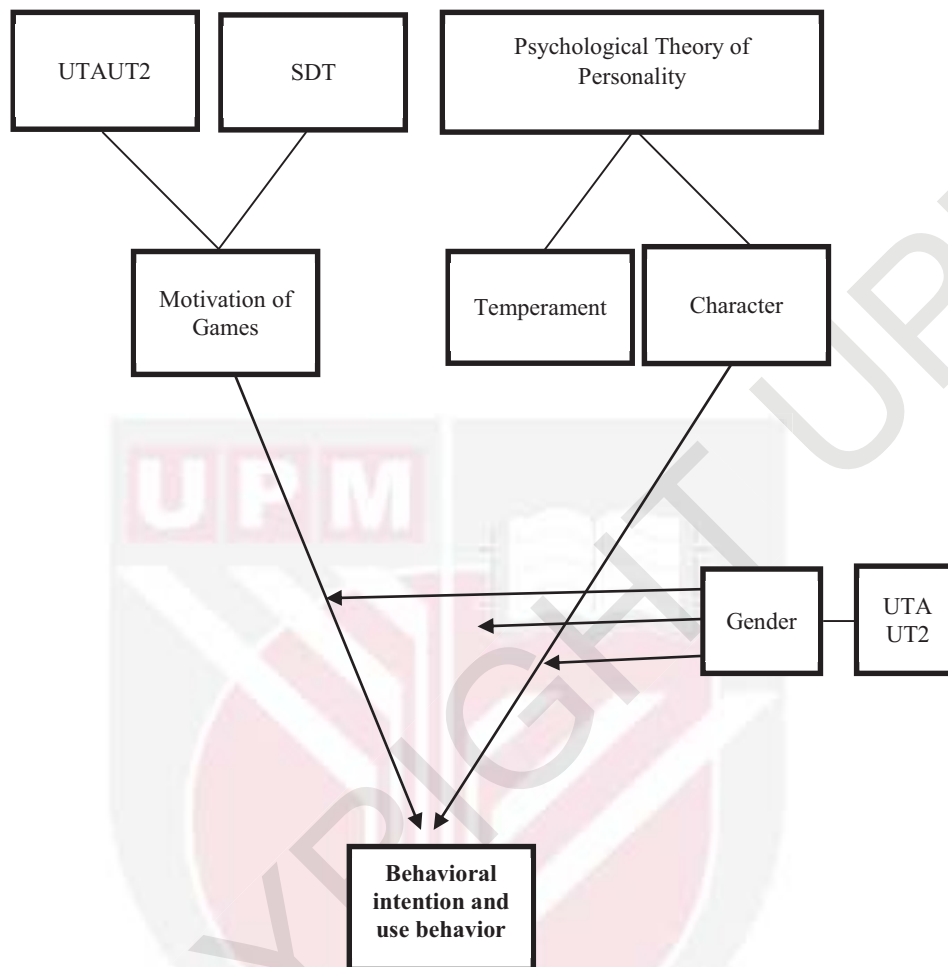
### **Integration of the Theories**

In this study, there are two factors such as hedonic motivation (i.e., intrinsic motivation) and gender, which are used to be confirmed as a key predictor in different researches associated with consumer technology acceptance and use (Brown & Venkatesh, 2005; Escobar-Rodriguez & Carvajal-Trujillo, 2014; Holbrook & Hirschman, 1982; Raman & Don, 2013; Van der Heijden, 2004; Venkatesh et al., 2012) In the context of present study,

hedonic motivation requires everything that players are able gain as fun, enjoyable, or entertaining as attractive in video games. Therefore, it is assumed that this content plays a major role in predicting Problematic video game play as technology acceptance and use.

In conclusion, the UTAUT2 has been examined in new contexts, such as new technologies (e.g., Problematic video game play), new player population in Ahwaz located in Iran, and new cultural settings. By using the UTAUT2, this model should be identified as a chief theory that considers “behavior intention and use technology” related to motivation and the moderating effects of gender on the relationship between motivation and Problematic video game play of game and then technology intention and use behavior. Islam, Rehman Khan, Ungku Ahmad, and Ahmed (2013) defined behavior intention as an individual’s intention to perform a given act which can predict corresponding behaviors when an individual act voluntarily. Besides that, behavior intention is the subjective probability of carrying behavior. Thus; intentions show the motivational factors that influence in behavior (Mafe, Blas, & Tavera-Mesias, 2010). It was found that behavioral intention is to be the main factor of involvement on Problematic video game play. Therefore, the UTAUT2 is able to explain the motivational behavior and support the self-determination theory (SDT) theory as well.

The second theory is the self-determination theory (SDT), which emphasizes on the motivational role related to video games. Intrinsic motivation as one kind of motivation into the SDT theory seems that can particularly be linked with the UTAUT2. According to Deci, Vallerand, Pelletier, and Ryan (1991), the SDT is as a theory of motivation, which focuses on psychological needs and motives. Therefore, the SDT is able to explain the behavior intention based on motivational behavior and psychological needs. Finally, the third theory that is correlated with technology intention is the theory of personality traits. Previous studies show the latent association between personality traits and the acceptance of new technology (Wang & Yang, 2005; Zhou & Lu, 2011; San Martín, & Herrero, 2012). For instance, Wang and Yang (2005) have found that personality traits such as temperament and character affect the intention of adopting online stocking indirectly. Based on the UTAUT2, Xu (2014) has also resulted that the continuance intention is determined by personality characteristics including; enjoyment, fantasy, escapism, social, interaction, social presence, social influence, achievement, and habits. Therefore, technology intention and use behaviour might be determined by personality traits and motivation factors. The UTAUT2 Figure 1.3 shows the theoretical framework based on three theories.

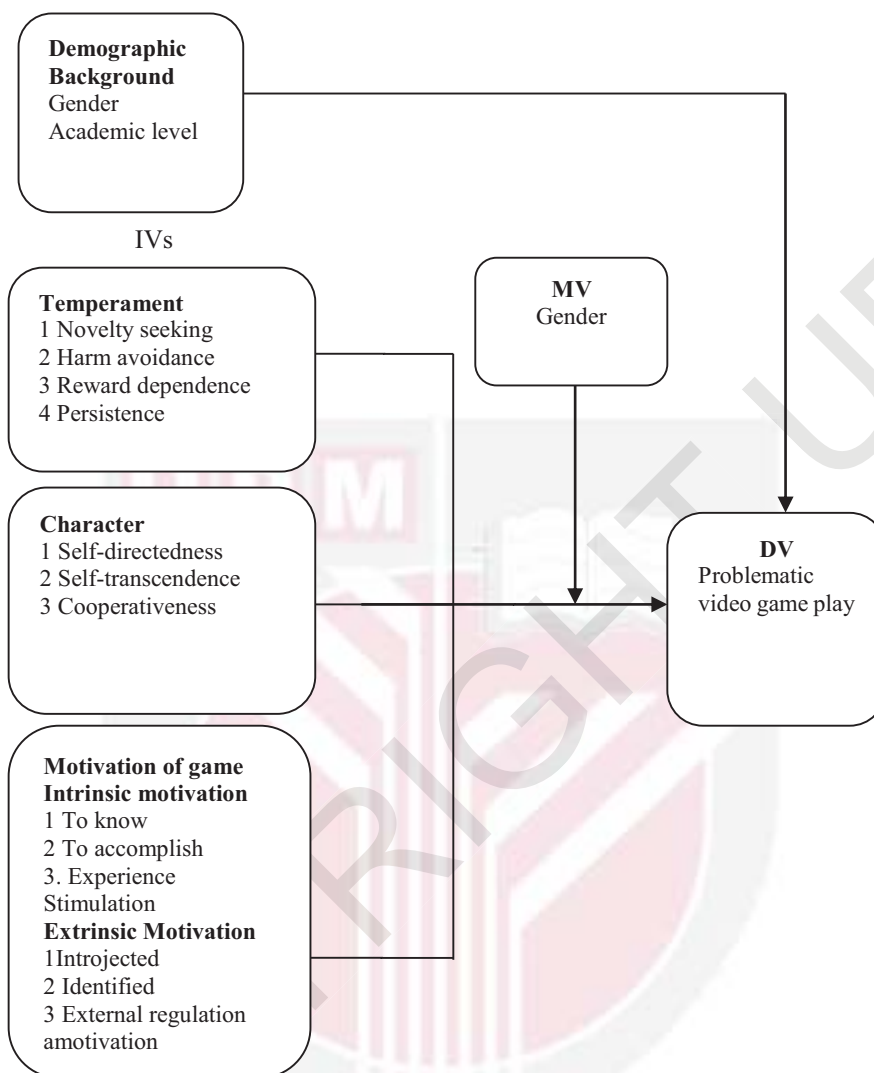


**Figure 1.3. Theoretical Framework for the Study is on the Moderating Effect of Gender on the Relationship between Temperament, Character, Motivation of Games and Problematic video game play among Adolescents in Ahwaz, Iran.**

### 1.5 Conceptual Framework

Based on the theoretical background, the conceptual framework of this study is shown in Figure 1.4. The conceptual framework integrated the self-determination theory on motivation of games, the UTAUT2 on gender and motivation, and Cloninger's model of personality on temperament and character. It summarizes the relationship between the independent variable (temperament, character, and motivation of game) and the dependent variable of Problematic video game play among adolescents. Additionally, the moderating role of gender was evaluated.





**Figure 1.4. Conceptual Framework for the Study is on the Moderating Effect of Gender on the Relationship between Temperament, Character, Motivation of Games and Problematic video game play among Adolescents in Ahwaz, Iran.**

Ko (2009) and Wood (2008) stated that individual biological and psychosocial factors have emerged as essential predictors regarding computer game addiction. Cho Kim, Kim, Lee, and Kim (2008) reported that Problematic Internet users achieved higher scores for the self-directedness and cooperativeness dimensions and lower scores for novelty seeking and self-transcendence profiles for the Junior TCI version when compared with the non-Problematic Internet user group, suggesting that biogenetic temperament and character profile patterns may be the etiologist of Problematic Internet use. Moreover, adolescents who are driven to video games varied in their degree of tendency to engage in video games as behavioural addiction.

A study was conducted by Ko et al., (2006) to examine the differences in personality characteristics between adolescents with and without Internet addiction and substance use experience. The result shows that high novelty seeking (NS), high harm avoidance (HA), and low reward dependence (RD) predicted a higher proportion of adolescents with Internet addiction. The findings also concluded that Internet activities, especially online games, provide a highly varied virtual environment that satisfies the adolescents' novelty seeking (NS) needs. Adolescents with high novelty seeking (NS) might be engaged in Internet activity with higher motivation and arousal responses. Therefore, high novelty seeking (NS) may predispose an individual to heavy Internet use and video games.

Moreover, it has been shown in studies that males with a tendency towards Internet addiction have a specific temperament. For example, Kim et al., (2006) found that novelty seeking (NS) scores and harm avoidance scores were greatly higher in those who have Internet addiction tendency. Kim, Han, Park, Min, Na, Won, and Park (2010) also investigated the relationship between types of game with personality trait factors and concluded that respondents, respectively, had higher novelty seeking (NS) scores and self-directedness (SD) scores. In addition, the sports game group had higher reward dependence scores than the other groups. It was reported in another study by Lee, Hong, and Joung (2007) that personality profiles affect the severity of Internet game addiction, alcohol use, and smoking behaviour among Korean adolescents. In conclusion, according to Diener, Larsen, and Emmons (1984), individuals tend to selectively engage in activities that best match their personalities.

Previous studies have concentrated on the underlying motivation of game players based on models and individual differences to distinguish patterns of play (Boyle, Connolly, Hainey, & Boyle, 2012). For instance, there are some studies that have prepared experiential associations between motivation (Ryan & Deci, 2000) and game play. These studies considered the needs for competence, autonomy, and relatedness forces motivation in gaming (Przybylski, Rigby, & Ryan, 2010; Ryan, Rigby, & Przybylski, 2006). However, certain motivation types in gaming exist that are more likely to be associated with excessive Problematic video game play. According to King and Delfabbro (2009), there is a positive correlation between motivation types and Problematic video game play. As a comparison, Wan and Chiou, (2007) have also studied Taiwanese adolescent and young adults and found players have higher intrinsic motivation than non-addicted adolescents.

This study examined the role gender as effective on all independent variables. In other words, gender effects on individual differences were considered while the researcher attempted to focus on temperament and character and Problematic video game play. Similarly, the role of gender is highlighted in this study's exploration of the relationship between motivation and Problematic video game play. Finally, frequency of gaming has been considered as a demographic background in a majority of studies, which shows that gender may influence engagement with video games (Dolatabadi et al., 2013). Therefore, the current study investigated the moderating effect of gender on temperament, character, motivation of game and Problematic video game play and recognized gender as buffering the relations of temperament, character, motivation of game, and adolescents' Problematic video game play as outcomes. Moreover, the effects of demographic background, such as gender and academic levels were examined. Based on what's described above, gender may play an additional role by buffering or moderating the impact of temperament, character, and motivation of game and adolescent outcomes.

## **1.6 Research Objectives**

The current study demonstrates the general objective, and specific objectives of the study. Based on the conceptual framework presented earlier, the study aimed to examine the relationships between the dimensions of temperament, character, type of motivation of game (intrinsic, extrinsic motivation and amotivation) and Problematic video game play among adolescents.

### **1.6.1 Specific Objectives**

The specific objectives of this study are as follows:

To describe temperament (novelty seeking (NS), harm avoidance (HA), reward dependence (RD), and persistence (P), character (self-directedness (SD), self-transcendences (ST), and cooperativeness (CO), motivation of games (intrinsic and extrinsic motivation and amotivation) and Problematic video game play among the adolescents in Ahwaz.

1. To compare the differences in Problematic video game play between male and female.
2. To examine the relationship between temperament (novelty seeking (NS), harm avoidance (HA), reward dependence (RD), and persistence (P), character (self-directedness (SD), self-transcendence (ST), and cooperativeness (CO), motivation of games (intrinsic, extrinsic motivation and amotivation) and Problematic video game play.
3. To examine the moderating role of gender on the relationship between temperament (novelty seeking (NS), harm avoidance (HA), reward dependence (RD), and persistence(p), character (self-directedness (SD), self-transcendence (ST), and cooperativeness (CO), motivation of games (to know, to accomplish, experience stimulation, introjected, identified, and external regulation, amotivation) and Problematic video game play.

## 1.7 Research Hypotheses

Since, temperament, character and motivation of games had several dimensions, based on previous studies (Kim, Han, Park, Min, Na, Won, & Park, 2010; Sharifi Fard et al., 2013) and Cloninger's suggestions (Cloninger, 1991; Cloninger et al., 1993), dimensions of these variables were measured separately. In addition, prior studies also acknowledged that the levels and kinds of motivation in any individual are different from others (Mahadi & Jafari, 2012). That is, not only levels and amounts of motivation in individuals are different but also their types of motivation can be different. Therefore, there is no possibility to compose types of motivation of games individually. Based on the research questions and objectives above, the following are twenty-nine hypotheses developed for the present study:

- H<sub>a1</sub>: There is a significant difference in Problematic video game play between male and female respondents.*
- H<sub>a2</sub>: Novelty seeking (NS) has a significant relationship with Problematic video game play.*
- H<sub>a3</sub>: Harm avoidance (HA) has a significant relationship with Problematic video game play.*
- H<sub>a4</sub>: Reward dependence (RD) has a significant relationship with Problematic video game play.*
- H<sub>a5</sub>: Persistence (P) has a significant relationship with Problematic video game play.*
- H<sub>a6</sub>: Self-directedness (SD) has a significant relationship with Problematic video game play.*
- H<sub>a7</sub>: Self-transcendence (ST) has a significant relationship with Problematic video game play.*
- H<sub>a8</sub>: Cooperativeness (CO) has a significant relationship with Problematic video game play.*
- H<sub>a9</sub>: Intrinsic motivation to know has a significant relationship with Problematic video game play.*
- H<sub>a10</sub>: Intrinsic motivation to accomplish has a significant relationship with Problematic video game play.*
- H<sub>a11</sub>: Intrinsic motivation experience stimulation has a significant relationship with Problematic video game play.*
- H<sub>a12</sub>: Extrinsic motivation identified has a significant relationship with Problematic video game play.*
- H<sub>a13</sub>: Extrinsic motivation introjected has a significant relationship with Problematic video game play.*

- H<sub>a</sub>14: Extrinsic motivation external regulation has a significant relationship with Problematic video game play.*
- H<sub>a</sub>15: Amotivation has a significant relationship with Problematic video game play.*
- H<sub>a</sub>16: Gender moderates the relationship between novelty seeking (NS) and Problematic video game play.*
- H<sub>a</sub>17: Gender moderates the relationship between harm avoidance (HA) and Problematic video game play.*
- H<sub>a</sub>18: Gender moderates the relationship between reward dependence (RD) and Problematic video game play.*
- H<sub>a</sub>19: Gender moderates the relationship between persistence (P) and Problematic video game play.*
- H<sub>a</sub>20: Gender moderates the relationship between self-directedness (SD) and Problematic video game play.*
- H<sub>a</sub>21: Gender moderates the relationship between self-transcendence (ST) and Problematic video game play.*
- H<sub>a</sub>22: Gender moderates the relationship between cooperativeness (CO) and Problematic video game play.*
- H<sub>a</sub>23: Gender moderates the relationship between intrinsic motivation to know and Problematic video game play.*
- H<sub>a</sub>24: Gender moderates the relationship between intrinsic motivation to accomplish and Problematic video game play.*
- H<sub>a</sub>25: Gender moderates the relationship between intrinsic motivation experience stimulation and Problematic video game play.*
- H<sub>a</sub>26: Gender moderates the relationship between extrinsic motivation identified and Problematic video game play.*
- H<sub>a</sub>27: Gender moderates the relationship between extrinsic motivation introjected and Problematic video game play.*
- H<sub>a</sub>28: Gender moderates the relationship between extrinsic external regulation and Problematic video game play.*
- H<sub>a</sub>29: Gender moderates the relationship between Amotivation and Problematic video game play.*

## **1.8 Significance of the Study**

Adolescents often constitute a large portion of any developing nation, and adolescents are not just future leaders but will also become main contributors in terms of human



capital and socioeconomic development in Iran. Thus, it is important to enhance our understanding of the various factors influencing behavioural development of adolescents. Regarding the effects of educational institutes, entertainment and service-centres on adolescents, it is possible that playing games have damaging consequences on an individual's family, social life, school, occupation, and even physical functions such as eating and sleeping, and may lower psychological as well as physical well-being, lower achievement, productivity, and impoverish personal and familial relationships when gamers play games excessively (Anderson & Bushman, 2001). It is hopeful that findings from this study will allow educators and parents to refine their knowledge of the unique nature and needs of adolescents in relation to parenting. Furthermore, in fulfilling the contribution of knowledge to fill the existing knowledge gap in this topic area, understanding the interplay among the key variables will help to design intervening efforts that effectively provide for individual differences among adolescents.

The current research focused on the moderating effect of gender on temperament, character, motivation of game and Problematic video game play based on the UTAUT2, the psychological theory of personality, and the SDT. It provides contributions by presenting more information about predictive factors of Problematic video game play to scientific societies by focusing on temperament, character, and motivation of game as predictive factors and the role of gender as a moderating factor through presentation of research results. Therefore, the current study provides insight into the effects of temperament, character, and motivation for game play on Problematic video game play. It is important to have knowledge of the origins and the facilitators of these variables. The findings of this study might provide some evidence regarding the enduring influences of temperament, character, and motivation of game regarding the role of gender on tendency for Problematic video game play. This study is also significant because of its potential to provide professional literature for understanding the factors affecting video gaming.

Findings of the current study may have essential implications and practical value for parents and educators. The findings provide emphasis on the need to educate parents to parent their adolescents in accordance with individual differences, with special attention on high risks associated with Problematic video game play. Additionally, those involved in the designation and implementation of family programs at the community level would find the findings informative. Family practitioners, educators, and policy makers could develop a pragmatic view of parent-child interaction over the teenage years and additionally design more effective prevention and intervention programs. Support may be needed for at-risk groups according to variation in personal characteristics. The study findings fervently signify the importance of understanding adolescents' temperament, character, and motivation of game in relation to Problematic video game play. The research makes an attempt to expand existing knowledge about effective factors such as temperament and character and motivation of games.

In sum, this study on adolescents' video gaming tendencies and their contributing factors, especially temperament, character, and motivation of game, is important for several reasons. First, understanding factors influencing tendencies to engage in video gaming and the mechanism of how these factors can affectively attract individuals toward video games. Second, the study is meant to increase information on a large scale and to present

it to the government through research reports so that it can enable the government to provide seminars and conferences to the public. Moreover, this research may enhance the information necessary for institutes such as schools and clinics for counselling about the causes of students' tendency toward video game play and focus serious attention to problems by carrying out workshops and seminars for students, clients and counselling about excessive playing of video games in the Iranian context. Therefore, understanding the true mechanisms of temperament, character, and motivation of games may have important implications for policy makers in planning more effective prevention and intervention programs in Iran. Such programs would serve as a foundation for practitioners, physicians, and counsellors to identify and facilitate the family systems towards a functional society.

## **1.9 Definition of Terminology**

Some important key terms, including subjects of interest and key variables used in the present study, are defined conceptually and operationally, below.

### **1.9.1 Temperament**

#### **Conceptual Definition:**

Temperament refers to systems based on activation, inhibition, and maintenance through varying systems, independently (Cloninger, Przybeck & Svrakic, 1991). According to Cloninger (1994), temperament has been known as the responses automatically to all the surrounding things that identified moods and habits. Temperament is divided into four dimensions: novelty seeking (NS), harm avoidance (HA), reward dependence (RD), and persistence (P).

#### **Operational Definition:**

Temperament is as an independent variable which is assessed with the participant's score on the Temperament Short Inventory (P-125) by Kaviani and Poornaseh (2005).

#### **Novelty Seeking:**

##### **Conceptual Definition:**

Novelty seeking is defined as a frequent exploratory activity in response to novelty, impulsive decision making, extravagance in approach to cues of reward, and quick loss of temper and active avoidance of frustration (Cloninger, Svrakic, & Przybeck, 1993).

##### **Operational Definition:**

Novelty seeking is a dimension of temperament which is assessed with the participant's score on the Temperament Short Inventory (P-125) by Kaviani and Pournaseh (2005).

### **Harm Avoidance**

#### **Conceptual Definition:**

Harm avoidance is described as a behaviour based on cautiousness and pessimism (Hartman, Hopfer, Corley, Hewitt, & Stallings, 2013).

#### **Operational Definition:**

Harm avoidance is a dimension of temperament which is evaluated with the participant's score on the Temperament Short Version Inventory (P-125) by Kaviani and Pournaseh (2005).

### **Reward Dependence**

#### **Conceptual Definition:**

Hypothesized to be a heritable tendency toward response intensity to signals of rewards, thereby maintaining behaviour (Cloninger, 1987).

#### **Operational Definition:**

Reward Dependence is a one of dimension of temperament which is evaluated with the Participant's score on the Temperament Short Version Inventory (P-125) by Kaviani and Pournaseh (2005).

### **Persistence:**

#### **Conceptual Definition:**

Persistence involves the tendency to persevere in behaviours that have been previously associated with rewards or relief from punishment, despite frustration and fatigue (Duijsens & Cloninger, 1998).

#### **Operational Definition:**

Persistence is a dimension of temperament and evaluated with the participant's score on the Temperament Short Version Inventory (P-125) by Kaviani and Pournaseh (2005).

## **1.9.2 Character**

#### **Conceptual Definition:**

Mochcovitch, Nardi, and Cardoso (2012) defined character as the following:

Character defined as a more complex cognitive process that is correlated with semantics or explicit memory. It identified as a rational reorganization of perceptions, and experiences, which transforms them into concepts, giving them significance (p.342).

#### **Operational Definition:**

This variable refers to a participant's score on the Character Short Version Inventory (P-125) by Kaviani and Pournaseh (2005).



### **Self-Directedness**

#### **Conceptual:**

This dimension is identified as the tendency to self-direct and the ability of an individual to control and adapt behaviour to fit the situation in accord with individually chosen goals and values (Watson & Tharp, 1989).

#### **Operational:**

This variable refers to a participant's score on the Character Short Version Inventory (P-125) by Kaviani and Pournaseh (2005).

### **Self-Transcendence**

#### **Conceptual:**

Self-transcendence refers to identification with everything conceived as essential and consequential parts of a unified whole (Cloninger, Svrakic, & Przybeck, 1993).

#### **Operational:**

This variable refers to a participant's score on the Character Short Version Inventory by Kaviani and Pournaseh (2005). A higher score on this indicates higher self-transcendence.

### **Cooperativeness**

#### **Conceptual:**

Cooperativeness refers to individual differences in identification with and acceptance of other people (Cloninger, Svrakic, & Przybeck, 1993).

#### **Operational:**

This variable refers to a participant's score on the Character Short Version Inventory (P-125) by Kaviani and Pournaseh (2005). A higher score on this dimension indicates higher cooperativeness.

### **1.9.3 Problematic Video Game Play**

#### **Conceptual:**

Problematic video game play is defined as excessive and compulsive use of a computer or video game where a gamer is unable to control this excessive use (Lemmens, Valkenburg, & Peter, 2009).

#### **Operational:**

Problematic video game play as a dependent variable was acquired from the participant's score on the Problem Problematic video game play Test, or PVGT by King and Delfabbro (2009).

#### 1.9.4 Motivation

**Conceptual:**

Motivation was chosen as an independent variable and involves both internal and external forces that trigger, direct, develop, and maintain involvement in an activity (Ryan & Deci, 2000 as cited in King & Delfabbro, 2009).

**Operational:**

Motivation was determined based on a participant's score on the Problematic video game play motivation scale (VGMS) which adapted by King and Delfabbro (2009). Higher scores on each motivation subscale states greater motivation for game play (King & Delfabbro, 2014).

#### **Intrinsic Motivation to Know**

**Conceptual:**

The players' interest in learning, exploring, and understanding the elements of the game (King & Delfabbro, 2009).

**Operational:**

Intrinsic motivation to know evaluated with the participant's score on the Problematic video game play motivation scale (VGMS) by King and Delfabbro. Higher scores on intrinsic motivation to know determine higher motivation to know for Problematic video game play (King & Delfabbro, 2014).

#### **Intrinsic Motivation to Accomplish**

**Conceptual:**

An intrinsic need to stop the game or overcome its challenge, as well as improve an individual's skill at the video game (King & Delfabbro, 2009).

**Operational:**

Intrinsic motivation to accomplish assess with the participant's score on the Problematic video game play motivation scale (VGMS) by King and Delfabbro. Higher scores on intrinsic motivation to accomplish indicate higher motivation to accomplish for video game play (King & Delfabbro, 2014).

#### **Intrinsic Motivation to Experience Stimulation**

**Conceptual:**

To obtain pleasure and enthusiasm related with the activity (King & Delfabbro, 2009).

**Operational:**

This variable refers to a participant's score on the Problematic video game play motivation scale (VGMS) by King and Delfabbro (2009). Higher scores on intrinsic motivation to experience stimulation indicate higher motivation experience stimulation for game play (King & Delfabbro, 2014).

### **Extrinsic Motivation Introjected**

#### **Conceptual:**

Extrinsic motivation introjected characterized as a release of tension or guilt. Paradoxically, the negative feelings are caused by the excessive amount of time spent playing video games (King & Delfabbro, 2009).

#### **Operational:**

Intrinsic motivation to Introjected measured with the participant's score on the Problematic video game play motivation scale (VGMS) by King and Delfabbro. Higher scores on intrinsic motivation introjected indicate higher motivation introjected for game play (King & Delfabbro, 2014).

### **Extrinsic Motivation Identified**

#### **Conceptual:**

Extrinsic motivation identified defines when an individual gains internal values such as recognition regarding video games (King & Delfabbro, 2009).

#### **Operational:**

Intrinsic motivation Identified assess with the participant's score on the Problematic video game play motivation scale (VGMS) by King and Delfabbro. Higher scores on intrinsic motivation identified indicate higher motivation identified for game play (King & Delfabbro, 2014).

### **Extrinsic Motivation External Regulation**

#### **Conceptual:**

Extrinsic motivation external regulation determines when a person interest in gaining rewards, items, or achievements in the video games (King & Delfabbro, 2009).

#### **Operational:**

Intrinsic motivation to External Regulation assess with the participant's score on the Problematic video game play motivation scale (VGMS) by King and Delfabbro. Higher scores on intrinsic motivation external regulation confirm higher external regulation motivation for game play (King & Delfabbro, 2014).

### **Amotivation**

#### **Conceptual:**

Playing video games to relieve feelings of boredom but without any purpose, described as apathetic, mentally disengaged and with little sense of meaning (King & Delfabbro, 2009).

#### **Operational:**

Amotivation measured with the participant's score on the Problematic video game play motivation scale (VGMS) by King and Delfabbro. Higher scores on intrinsic motivation Amotivation indicate higher Amotivation for game play (King & Delfabbro, 2014).

### 1.9.5 Gender

**Conceptual:**

Gender Refers to the attitudes, behaviours, and feelings that a given culture associates with an individual's biological sex (American Psychological Association, 2009).

**Operational:**

In this study, gender variable determined by Participants' response to question on gender.

### 1.9.6 Adolescent

**Conceptual:**

Adolescents are those individuals who are in a transitional period between puberty and adulthood in a human development (Sigelmen & Rider, 2014).

**Operational:**

In the current study, the adolescents are referred to the Iranian students aged between 15-18 years studying in the high school in Ahwaz. This study obtained Participants' response to questions on age.

### 1.10 Organization of the Thesis

The thesis comprises five chapters. Each chapter is divided into major sections and subsections, accordingly. The chapter layout of the thesis body is sectioned into the following:

Chapter 1: Introduction– This chapter introduces the subject matter and statement of the problem, along with the theoretical background and conceptual model that guided the study. It sets out the research objectives, hypothesis, and the significance of the study, as well.

Chapter 2: Literature Review– This review chapter contains a critical and comprehensive examination of the literature pertaining to the topic of interest. The review was analysed and synthesized logically and provides the gist of related findings of past research that impact the current study.

Chapter 3: Methodology– This section encompasses a description of methods used to attain the stated research objectives. Research design, sample selection, measures, and statistical analysis are described in detail, concisely.

Chapter 4: Results and Discussion – This chapter reports a complete account of the findings obtained in the study in accordance with research objectives with the aid of figures and tables. The discussion portion presents the interpretation of findings in relation to the objectives.

Chapter 5: Conclusion, Implications, and Recommendations for future Research– This last chapter of the thesis gives the overall significance of the study with summary,

conclusions, and implications. It highlights conclusions in line with research objectives, and discusses the implications theoretically and practically. Recommendations for future research are provided.

### **1.11 Chapter Summary**

This chapter introduced the research area by stating the background of the study and statements of problem. The theoretical background and conceptual framework that guided the study were included. This was followed by clearly stated general and specific research objectives, research hypotheses, and definitions of several key terms of the study. Significance of the study was discussed. The next chapter is a guided review through the literature that informed the present study.



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