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## Flow Theory and Online Marketing Outcomes: a Critical Literature Review

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### Abstract

The aim of this paper is to provide a critical review of flow theory - a psychological state - and its marketing outcomes in online environments. Despite the strong interest of researchers from various disciplines, adapting the flow theory to online environments has been problematic. Based on a careful examination of the literature, we identified conceptual challenges confronted when studying flow online. The paper further discusses some possible solutions for challenges and underlines the need for more studies in this research area. Finally, marketing outcomes of applying flow theory in online environment were examined.

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### 1. Introduction

The growing importance of technologies in today's information economy has created a significant interest among academia and industry worldwide for understanding and delivering compelling experiences to online consumers. Flow is an important construct for companies and worthy to be considered for understanding and improving customer relationships in online environments.

Many researchers have studied flow in different contexts (Agarwal and Venkatesh, 2000; Chen et al., 1999; Chen, 2000, 2006; Csikszentmihalyi, 1975, 1988, 1989, 1990, 1992, 2000, 2004, 2005; Hoffman et al., 1996; Huang, 2003; Koufaris, 2002; Novak et al., 2000, 2003; Trevino et al., 1992; Webster et al., 1992) such as sports (Jackson, 1996), reading (McCuillan and Conde, 1996) or in work environments (Allison et al., 1988). Flow was

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recognized to be a useful variable for explaining online consumer behavior (Hoffman et. al., 1996; Koufaris, 2002). Siekpe (2005) showed that "flow construct [...]" is important "for understanding the nature of the consumer experience."

Flow is a hedonistic construct, whose importance has been widely recognized as having a major impact on the user's behavior of information systems (Csikszentmihalyi, 1975). According to Csikszentmihalyi (1975, 1988), flow is a "crucial component of enjoyment" and is "the holistic sensation that people feel when they act with total involvement". In a flow state, the consumers perceive an effortless action, loss of time and a sense that the experience stands out as being exceptional compared with daily activities (Csikszentmihalyi, 1997). Flow is a continuous variable that in different levels of flow can occur, ranging from none to an intense (or complete) state (Csikszentmihalyi and Csikszentmihalyi, 1988). The research to dates studied flow experience as an independent variable, as a dependent variable, and lately, as a mediator variable.

Since 1996 (see Hoffman and Novak) the universal applicability of flow theory was extend to online environments and scholars suggested that the success of online marketers depends on their ability to create opportunities for consumers to experience flow. Despite the strong interest in adapting the flow theory for online environments, the literature shows inconsistency and discrepancies. Many studies are hampered by conceptual ambiguities and a confusion about construct dimensions. Conceptual and empirical models of flow still need to clarify the relationship between the construct and its dimensions.

Based on an extensive review of existing research on flow theory, we emphasize possible solution to clarify the theoretical framework of studying online flow.

This paper is structured as follows: in the beginning, we present the origin and meaning of the flow construct and differenced it from similar experiences. Then, different conceptualizations of flow and construct dimensions. Further, we continue with the review of the most important conceptual and empirical models of optimal experience, both in online and offline environment and undertake a comparative analysis of them. Finally, we present the marketing outcomes of online flow and other consequences that may affect consumer behavior in the online environment.

## 2. Flow Theory

Flow theory received a growing attention in the last years as a basis to understand the facilitators for develop compelling experiences in online environments. The origin of this theory can be traced back in the papers of Csikszentmihalyi. While interviewing certain professional and amateur dancers, chess players, rock climbers, surgeons, and many others that expressed a deep devotion for their preferred sort of activity, Csikszentmihalyi selected a special feeling, called "optimal experience". During the interview sessions, Csikszentmihalyi found that individuals verbalize it as "being in the midst of a flow". Csikszentmihalyi (1975; 1990) called this holistic experience flow.

Flow theory is one of the two theories of intrinsic motivation developed in positive psychology paradigm (Seligman and Csikszentmihalyi, 2000). The other theory (Self-Determination Theory) was developed and presented by Deci and Ryan (1985). In fact, the theory of optimal experience or flow is not only motivational. Csikszentmihalyi and his colleagues were engaged in serious efforts to present flow experience as: (1) an cognitive artifact (the starting point is the center of attention), applied for the description of holistic personal development (Csikszentmihalyi, 1978, 1975), (2) an important factor in the evolution of bio-culture and selection (Csikszentmihalyi, 1990; Massimini and Delle Fave, 2000), (3) a theory of creativity, work well done and talented adolescents (Csikszentmihalyi, 1996; Csikszentmihalyi, Rathunde and Whalen, 1993; Gardner, Csikszentmihalyi and Damon, 2001), (4) a psychological theory of development (Csikszentmihalyi, 1990; Csikszentmihalyi and Larson, 1984); (5) a basis for psychological rehabilitation practice (Delle Fave and Massimini, 2004, 2005).

Despite the variety of interpretations, in this study the flow experience is discussed as a motivational paradigm. Flow theory was first applied to online environments by Hoffman and Novak (1996). They extended the universal applicability of flow to computer-mediated environments and suggested that "optimal experience" can contribute to the success of online marketers by creating exciting experiences to consumers. Because the Internet is an interactive environment, it provides opportunities to customers to experience flow during their navigation (Chen

et al., 1999). Because of its marketing outcomes, flow experience is a desirable consequence of online interaction between the consumer and firms.

### *2.1. Definitions of flow*

Despite its relevance for the online environment, flow proved to be an elusive construct. What is flow? Csikszentmihalyi (1977) describes the flow experience as "holistic sensation that people feel when they act with total involvement" (Csikszentmihalyi, 1977), but other scholars focus their conceptualization on other constructs that seem to characterize the flow experience. Some of these constructs affect or are a cause of flow, and others are experienced as a result of the individual's flow state.

Perhaps the most comprehensive definition is provided by Csikszentmihalyi (1997), who discusses the following major characteristics of flow: (1) clear and distinct goals, (2) temporary loss of self-consciousness, (3) distorted sense of time, (4) actions merging with awareness and immediate feedback, (5) high concentration on the task, (6) high level of control, (7) a balance between the available skills of the individual and the task challenges, and (8) autotelic experiences. Lutz and Guiry (1994) state that: "psychologists use the term 'flow' to describe a state of mind sometimes experienced by people who are deeply involved in some event, object or activity...they are completely and totally immersed in it...Indeed, time may seem to stand still and nothing else seems to matter while engaged in the consumption event."

Hoffman and Novak (1996) extended the applicability of flow theory in online environments, such as the World Wide Web, and defined flow as the state occurring during network navigation which is: (1) characterized by a seamless sequence of responses facilitated by machine interactivity, (2) intrinsically enjoyable, (3) accompanied by a loss of self-consciousness, and (4) self-reinforcing.

Analyzing the conceptual definitions of flow in both online and in the offline environment, we noticed that many ambiguities makes it difficult to measure this construct. However, various characteristics of flow show conceptual similarities. The literature review on flow theory reveals that flow is considered to be a multidimensional complex construct characterized by relations between a large set of unidimensional constructs which have been proposed as components of flow theory by different researchers (Koufaris, 2002; Hoffman and Novak, 2009; Bridges and Florsheim (2008).

### *2.2. Concepts related with flow: peak experience and peak performance*

Over the time, researchers in psychology have developed several concepts that are similar with flow because they can be considered optimal experiences. In this section we compare and contrast two of those concepts: peak experience and peak performance. On one hand, peak experience is "a generalization for the best moments of the human being, for the happiest moments of life, for experiences of ecstasy, rapture, bliss, of the greatest joy" (Maslow, 1971). The difference between flow and peak experience is that both may involve high levels of enjoyment. Peak experiences differ from flow experiences in which 'the former is "all or nothing" while the latter varies in intensity' (Walker et al., 1998, p. 455). For example, a student who is at his graduation ceremony could experience peak experience. On the other hand, peak performance is "superior use of human potential" and "it refers to the full use of human power, whether if that will be physical strength in a crisis, creative expression through an artistic endeavour, intellectual mastery of a problem, or another experience that significantly taps human potential (Privette, 1983). For example, winning the world cup (and receiving the trophy) could be a moment when a soccer player experiences a peak performance. The main idea is that peak performance can be compared to both peak experience and flow in terms of the levels of enjoyment and performance that are involved. Peak performance involves a high level of performance, but is not necessarily accompanied by enjoyment. Flow involves both enjoyment and performance, but is not defined by their level of intensity. Finally, we draw a line between attention, involvement and flow. Privette (1987) considers attention and involvement as common qualities for the state of flow, peak experience and peak performance they are not optimal experiences.

### 3. Flow Models

In this section we present a short descriptions and an analysis of the main flow models in online and offline environment that could be useful for a better understanding of flow theory.

#### 3.1. Four Channel Flow Model

According to flow theory (Csikszentmihalyi, 1977), the flow state is determined by two factors: skills (a person's ability to successfully perform a task) and challenges (the necessary efforts to perform a task). The four channel model proposed by Csikszentmihalyi (1977) is the original flow model and it is shown in Figure 1.

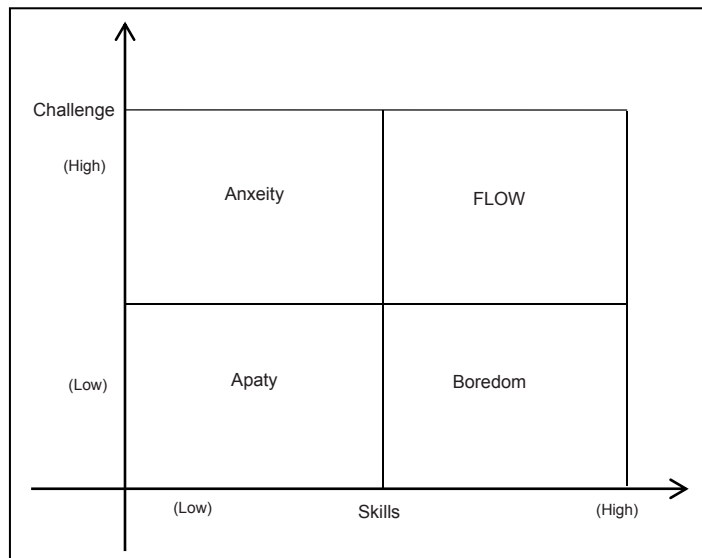


Figure 1: The Four-Channel Flow Model, Source: Csikszentmihalyi (1977)

We can see that figure illustrates the flow state through two axes: skills and challenges. If the level of challenge is higher than the level of skills, individuals will be overwhelmed by anxiety because they are not able to handle task. When the level of challenge is lower than the level of skills, and a small effort is needed to perform a task, the individual will experience boredom. If the level of skills and the level of challenge are extremely low, the person will feel apathetic. Flow occurs only when a difficult task is in balance with the person's skill, meaning that both skills and challenges are high.

#### 3.2. Model of Flow in Human Computer Interaction

In 1995, Ghani developed a model of flow in human-computer interaction. His model, shown in Figure 2, considers the antecedents of flow: fitness of task (the balance between skills and challenges), perceived control, and cognitive spontaneity ("playfulness"). The flow state can be measured through the constructs of enjoyment and concentration.

The consequences of flow are: focused on the process, increased learning, and increased creativity.

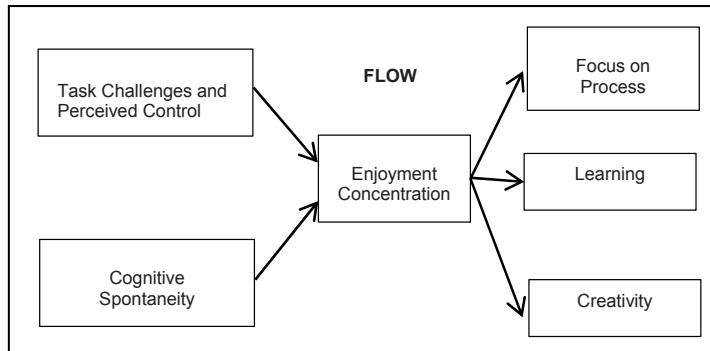


Figure 2: Model of Flow in Human Computer Interaction, Source: (Ghani, 1995)

This model proposed by Ghani illustrates the complexity of the balance of a user’s skills and challenges. For example, with a high level of skills, the user feels more in control, which can lead to flow. However, when the level of skills greatly exceed challenges, boredom will likely result, providing a negative influence on flow. Also, Ghani finds that the construct of fit (challenges and skills) influences flow indirectly, mediated through perceived control. The model of flow in human-computer interaction proposed by Ghani can be considered a "transition" model because is a bridge between offline flow models and online flow models.

3.3. Model of Flow within a Computer-Mediated Environment

Hoffman and Novak (1996) develop a theoretical model of flow within the hypermedia environment of the Web (Figure 3).

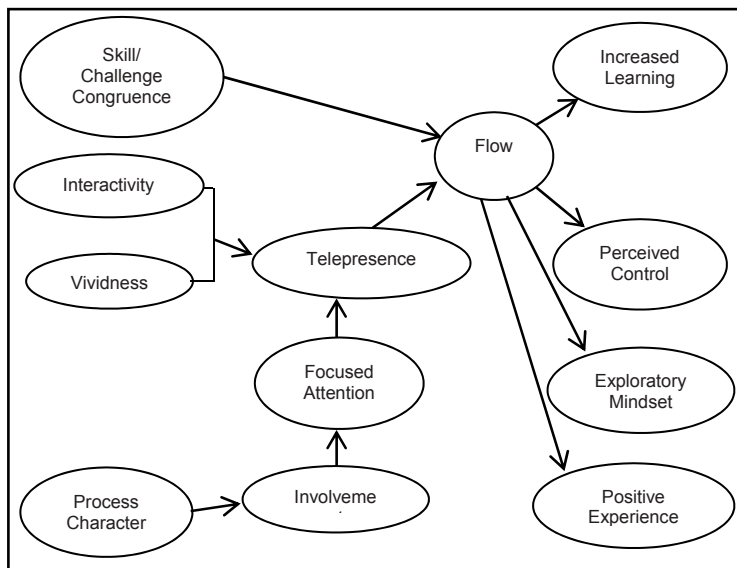


Figure 3: Model of Flow within a Computer-Mediated Environment, Source: (Hoffman and Novak, 1996)

Based on Csikszentmihalyi’s studies, they show that primary antecedents to flow are: challenges, skills, and focused attention. They add two secondary antecedents from Steuer’s communication work: interactivity and

telepresence. Steuer (1991) defines telepresence as "the extent to which one feels present in a mediated environment, rather than in the immediate physical environment" and identifies vividness and interactivity as two dimensions which determine the degree of telepresence within a particular technology. Hoffman and Novak use vividness and interactivity as content characteristics that directly influence telepresence and focused attention.

Also, they add the construct of involvement (intrinsic motivation and self-reliance) which is influenced by whether the activity is goal-directed or experiential. They label goal directed and experiential as process characteristics. In this model, consequences of flow are: increased learning, perceived control, exploratory mind-set, and positive subjective experience.

In 2000, Novak and colleagues make some adjustments to their 1996 theoretical model and test it empirically using structured equation modeling to create a revised theoretical model. One important change in the flow model within a computer-mediated environment is the shift of control construct from a consequence to an antecedent of flow. Also, is added the construct of arousal as an antecedent of flow, and is a dependent variable of challenge. In the revised model, the primary antecedents of flow are skill/control, challenge/arousal, and focused attention. The secondary antecedents are experience with the Web, interactive speed, and importance. Novak et al. (2000) do not find support for the hypothesis that greater flow corresponds to greater exploratory behavior. Instead, exploratory behavior corresponds with telepresence. Thus, telepresence contributes to flow and exploratory behavior.

### 3.4. Model of flow antecedents, flow experience and flow consequences

In his dissertation, Chen (2000) finds empirical evidence for a correlation between a Web user's flow experience and ten flow dimensions originally proposed by Csikszentmihalyi (1990).

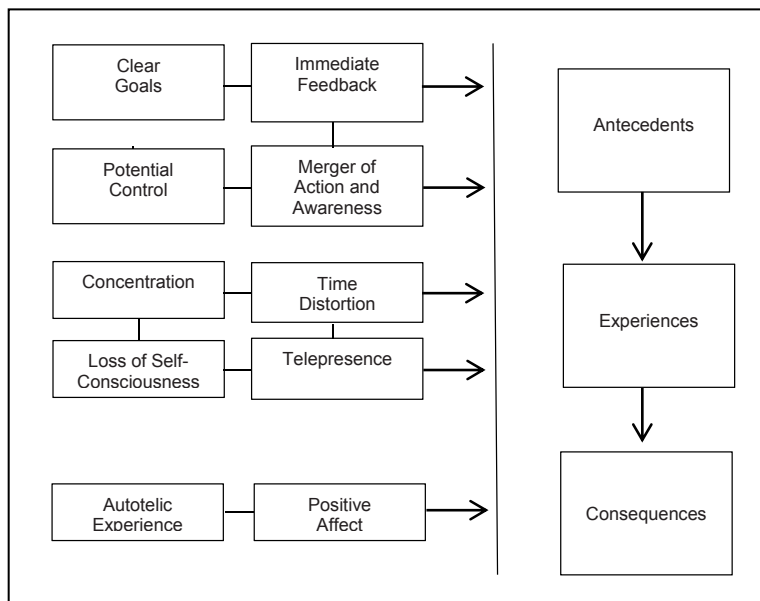


Figure 4: Model of Flow antecedents, flow experience and flow consequences, Source: (Chen, 2000)

Using factor analysis, Chen breaks down the ten dimensions into three factors labeled flow antecedents, flow experience, and flow consequences (Figure 4). In this model, the flow antecedents are: clear goals, immediate feedback, potential control, and merger of action and awareness.

The flow experience dimensions are: concentration, telepresence, time distortion, and loss of self-consciousness. The flow consequences are positive affect and autotelic experience.

The model proposed by Chen is important to clarify the flow phenomenon and his stages, although the studies that followed attempted to confirm or deny the dimensions of antecedents, flow experience, and flow consequences.

### 3.5. Person–Artifact–Task model of flow antecedents

Finneran and Zhang (2003) develop a model that focuses on flow antecedents and identifies the importance of separating the task artifact in computer mediated environments (Figure 5). The person-artifact-task (PAT) model of flow antecedents was developed to conceptualize three distinct components, such as: person, task and artifact – that interact a contribution to a person’s flow state, as antecedents.

The PAT model is important because it contributes to the re-conceptualization of the original flow theory for a better understanding of flow antecedents in online environment.

Finneran and Zhang state that the value of PAT model is that using it, researchers will be in a better position to say unequivocally that the artifact contributed to the flow experience as opposed to a particular absorbing task and will help them to conceptualize the flow dimensions.

We consider this flow model important for a better understanding of the flow phenomenon in online environments.

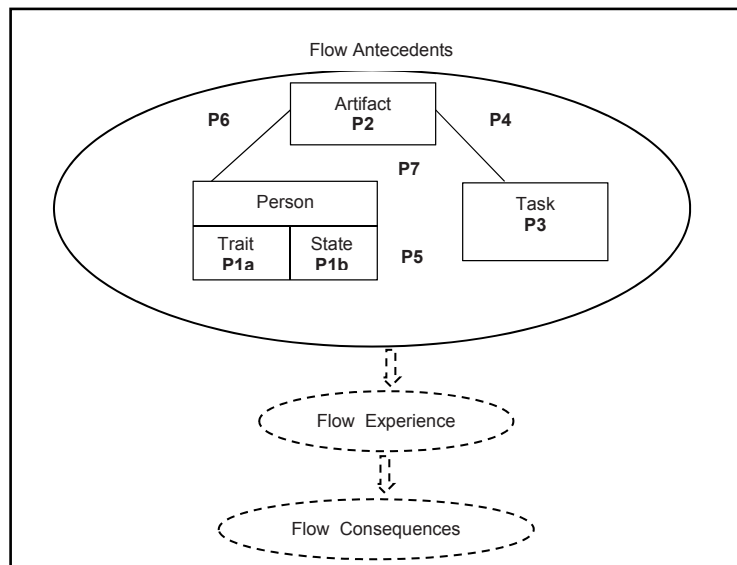


Figure 5: Person–Artifact–Task model of flow antecedents, Source: (Finneran and Zhang, 2003)

However, the PAT model emphasizes only the flow antecedents stage, not the entire flow framework and clarifies some of the conceptual differences found in the existing flow models.

### 3.6. Flow Model within Context of Tourism Website

In 2004, Skadberg and Kimmel proposed a flow model to predict the level of flow for a tourism website (Figure 6).

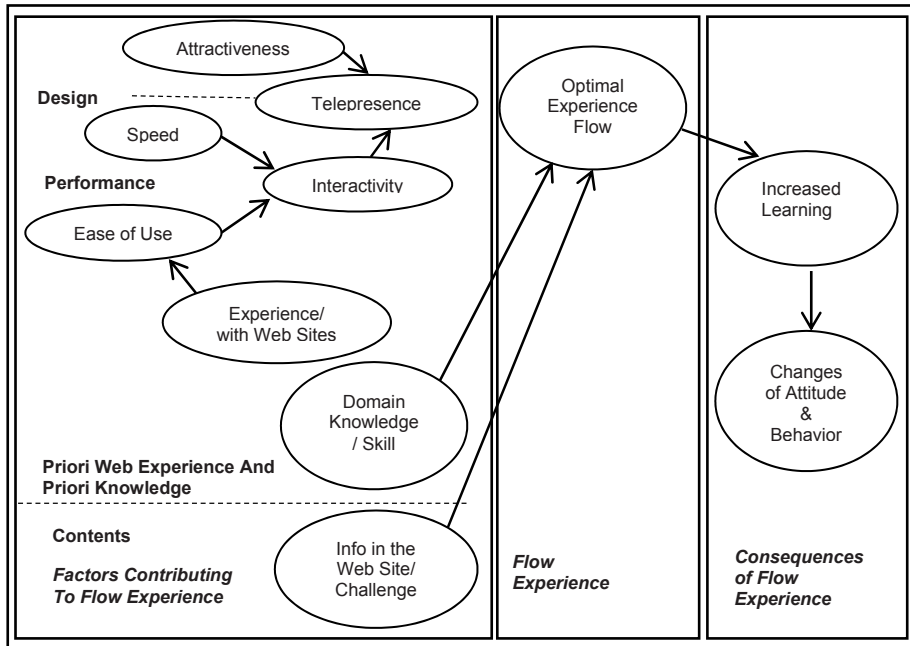


Figure 6: Flow Model within Context of Tourism Website, Source: (Skadberg and Kimmel, 2004)

The user's domain knowledge represents user's skill and the content of the Web pages represents the challenge. The third direct antecedent of flow is telepresence, which is influenced by site attractiveness and interactivity, the latter is further influenced by speed and ease of use. Flow is measured by time distortion and enjoyment. The consequence of flow is increased learning, which impacts attitude and behavior. This flow model is important because it can be used by marketers and designers in order to create compelling websites for firms.

### 3.7. Models of Flow as Reflective and Formative Conceptualizations

More recent, Siekpe (2005) developed and tested two models of flow (Figure 7) for specifying the right measurement model and to provide a practical way for researchers to decide on the causal interrelations among variables employed in their research.

His results suggest that challenge, control, curiosity, and concentration (FO latent variables) are better formulated as reflective dimensions of the flow construct rather antecedent dimensions.

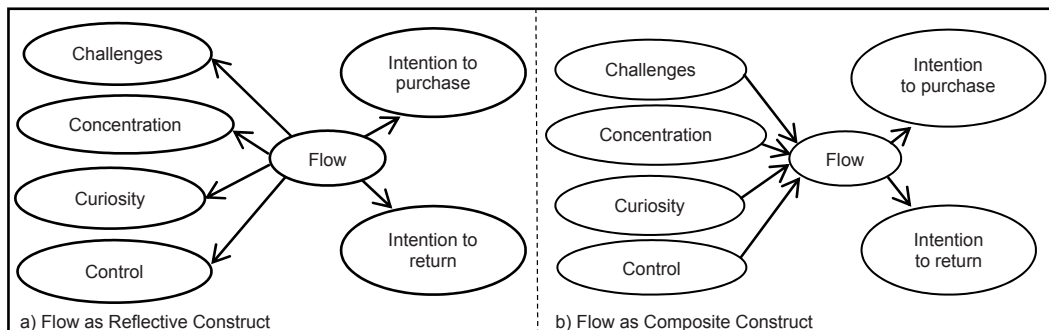


Figure 7: Models of Flow as Reflective and Formative Conceptualizations, Source: (Siekpe, 2005)



He concluded that, in order to assess flow: (1) the direction of causality is from the HO construct to the FO latent variables, (2) The FO variables are manifestations of the HO construct, and while changes in the FO variables should not cause changes in the HO construct, changes in the HO construct do cause changes in the FO variables, (3) The FO variables should share a common theme and are expected to co-vary with each other.

### *3.8. Conceptual challenges of flow: a comparison of flow models*

Analyzing the summarized flow models, we see that some of the constructs are present in all of the models, while others are unique to a particular model. The same concepts may be referred to with different construct names. For example, Ghani (1995) and Chen (2000) focus on primary antecedents, but Hoffman and Novak (1996) and Skadberg and Kimmel (2004) also look at secondary or indirect antecedents that yield flow through a mediating construct. In general, the models and other empirical flow studies seem to suggest the following three stages as a flow framework: flow antecedents, flow experience, and flow consequences (Chen, 2000; Ghani, 1995; Ghani and Deshpande, 1994; Trevino and Webster, 1992). However, we can identify also discrepancies of the constructs and their structure within each model. For example, perceived control is considered an important antecedent by Ghani (1995) and Chen (2000), but, in another study, Hoffman and Novak (1996) consider perceived control to be a consequence of flow. Hoffman and Novak (1996) and Novak et al. (2000) include aspects of the interface such as interactivity in their model, yet Chen ignores such characteristics.

## **4. Marketing outcomes of online flow**

From a marketing perspective, flow theory proved to be very important for understanding the consumer's behavior in online environments. In this section we underline the marketing consequences (outcomes) of online flow.

### *4.1. Learning*

One important consequences of online flow is an increased learning. Researchers confirmed that consumers who experienced flow during Web usage are more likely to retain more of what they perceive, with implications for the effectiveness of marketing communications (Hoffman and Novak, 1996). Flow was found as the increase learning, and the increased learning, along with Website attractiveness, was the most important factor affecting change of attitude and behavior (Skadberg and Kimmel, 2004).

In their study, Choi, Kim, and Kim (2007) revealed that flow experience was positively related to learning outcomes among participants in a Web-based firm resource planning training program. In other studies, learning was also an important consequences of online flow (Hoffman and Novak, 2009; Ho and Kuo, 2010).

### *4.2. Attitudes, behavioral intentions, and behavior*

Flow experience has been proven to influence online consumer's attitudes, behavioral intentions and behavior. For example, in some studies flow has been found to influence attitude toward online purchasing (Korzaan, 2003), attitude toward e-learning (Choi, Kim, and Kim, 2007), brand attitudes (Mathwick and Rigdon, 2004; Sanchez-Franco, 2006). Also, Hsu and Lu (2004) concluded that flow influence attitude toward Web and brand. Luna, Peracchio, and de Juan (2003) found that attitude toward a Web site influenced flow. Hoffman and Novak (1996) found positive subjective experience to be an outcome of online flow. Reid (2004) showed that flow influence user satisfaction and creativity.

In other studies, flow has been found to influence behavioral intentions. Luna, Peracchio, and de Juan (2002, 2003) and Richard and Chandra (2005) showed that flow influence online purchase intentions. Flow also influence

revisit intentions (Koufaris, 2002; Luna, Peracchio, and de Juan, 2002, 2003), intention to use the Web (Agarwal and Karahanna, 2000; Sanchez-Franco, 2006), and intention to play an online game (Hsu and Lu, 2004).

Korzaan (2003) found that flow experience influence indirect, through attitude purchase intention, intention to use the Web (Sanchez-Franco, 2006) and intention to play an online game (Hsu and Lu, 2004). Some other researchers tested the impact of flow on online purchase (Bridges and Florsheim, 2008) and Web usage (Sanchez-Franco, 2006).

#### *4.3. Exploratory behavior*

Another outcome of flow experience was an increased exploratory behavior (Novak, Hoffman, and Yung, 2000; Koorzan, 2003). In their study, Agarwal and Karahanna (2000) defined flow as a higher-order factor and found that the curiosity contributed to flow; Chou and Ting (2003) found that discovery contributed to flow.

#### *4.4. Control*

Flow scholars found a correlation between flow construct and perceived control (Webster, Trevino, and Ryan, 1993). Others, proposed that perceived behavioral control was an outcome of flow (Hoffman and Novak, 1996), or as contributing to a higher-order flow construct (Agarwal and Karahanna, 2000; Huang, 2006).

### **5. Conclusion**

Online environment evolved rapidly since its inception in 1990. The total number of users raised in 2012, according to Internet World Stats, at 2.4 billion with a penetration rate of 34.3% in world population. Understanding the consumer's online behavior is important in today's economy in order to create effective online marketing strategies. Flow theory has been found useful in understanding the factors which enhance compelling online experiences for the customers.

This paper attempts to provide a critical analysis of flow, a useful construct that can be used to explain online consumer behavior.

First, analyzing the definitions from flow studies in both online and offline environment, we noticed that there are many ambiguities and vagueness which makes it difficult to overcome the conceptual challenges confronted when studying flow online. Although considerable efforts have been made over time to provide clear and accurate definition of flow, it could not be identified a central definition of the flow, but with a variety of constructs that are experienced when an individual enters in flow state. However, various characteristics of flow show conceptual similarities but it seems that a comprehensive understanding of flow remains elusive.

Second, we noticed that flow models, both in offline and online environments are significantly different and, sometimes, even contradictory in terms of flow dimensions, direction of influence and stages where each dimension is located. The same concepts may be referred to with different construct names. We conclude that, most of flow models suggest the following three stages as a flow framework: flow antecedents, flow experience, and flow consequences.

Third, the marketing outcomes of flow experience proved to be important for understanding the online consumer's behavior. The accelerated pace of Web evolution requires a continuous study in time to see effective internal and external changes in online consumer experiences. Flow experience has been proven to influence learning, attitudes, computer use, positive experiences, behavioral intentions and customer's behavior.

The researchers had the vision to use flow theory as a way to understand consumers behavior in online environments, and thus to help marketers to create efficient and effective marketing strategies. The implications are clear. Future research should continue to study the marketing outcomes of flow experience in online environments.

## 6. References

- Agarwal, R.; Karahanna, E. (2000) Time Flies When You're Having Fun: Cognitive Absorption and Beliefs About Information Technology Usage, *MIS Quarterly*, 24(4), p. 665-694.
- Bridges, E.; Florshiem, R. (2008) Hedonic and Utilitarian Shopping Goals: The Online Experience, *Journal of Business Research*, 61 (April), p. 309–314.
- Chen, H.; Wigand, R.; Nilan, M. (1999) Optimal experience of web activities, *Computers in Human Behavior*, 15(5), p. 585-608.
- Chen, H. (2000) Exploring Web Users' On-line Optimal Flow Experiences, Unpublished PhD Dissertation, School of Information Studies, Syracuse, NY: Syracuse University.
- Chen, H. (2006) Flow on the net-detecting Web users' positive affects and their flow states, *Computers in Human Behavior*, 22(2), p. 221-233.
- Choi, B.; Lee, I.; Choi, D.; Kim, J. (2007) Collaborate and Share: An Experimental Study of the Effects of Task and Reward Interdependencies in Online Games, *CyberPsychology & Behavior*.
- Chou, T. J.; Ting, C. C. (2003) The role of flow experience in cyber-game addiction, *CyberPsychology & Behavior*, 6, p. 663-675
- Csikszentmihalyi, M. (1975) Play and Intrinsic Rewards, *Humanistic Psychology*, 15(3), 1975, p. 41-63.
- Csikszentmihalyi, M. (1977) *Beyond Boredom and Anxiety*, second printing, San Francisco: Jossey-Bass.
- Csikszentmihalyi, M.; Larson, R. (1984), *Being adolescent: Conflict and growth in the teenage years*, New York: Basic Books.
- Csikszentmihalyi, M.; Larson, R. (1987) Validity and reliability of the Experience Sampling Method, *Journal of Nervous and Mental Disease*, 175, p. 526–536.
- Csikszentmihalyi, M.; Csikszentmihalyi, I. S. (1988) *Optimal Experience: Psychological Studies of Flow in Consciousness*, Cambridge: Cambridge University Press, 1988.
- Csikszentmihalyi, M.; LeFevre, J. (1989) Optimal Experience in Work and Leisure, *Journal of Personality and Social Psychology*, 56 (5), p. 815-822.
- Csikszentmihalyi, M. (1990) *Flow: The Psychology of Optimal Experience*, New York: Harpers Perennial.
- Csikszentmihalyi, M.; Larson, R. (1992) Validity and Reliability of the Experience Sampling Method, in Vries, M.W.(Ed.), *The Experience of Psychopathology: Investigating Mental Disorders in their Natural Settings*, New York: Cambridge University Press, p. 43-57.
- Csikszentmihalyi, M.; Rathunde, K. R.; Whalen, S. (1993) *Talented teenagers: The roots of success and failure*, New York: Cambridge University Press.
- Csikszentmihalyi, M. (1997) *Finding Flow: The Psychology of Engagement with Everyday life*, Basic Books, New York.
- Csikszentmihalyi, M. (2004) Materialism and the evolution of consciousness, In: T. Kasser & A. D. Kanner (Eds.), *Psychology and consumer culture: The struggle for a good life in a materialistic world* (p. 91–106). Washington, DC: American Psychological Association.
- Csikszentmihalyi, M.; Abuhamdeh, S.; Nakamura, J. (2005) Flow. In A. Elliot & C. S. Dweck (Eds.), *Handbook of competence and motivation* (p. 598–608), New York: Guilford Press.
- Deci, E.; Ryan, R. (1985) *Intrinsic motivation and self-determination in human behavior*, New York: Plenum Press.
- Delle Fave, A.; Massimini, F. (2004) Bringing subjectivity into focus: Optimal experiences, life themes, and person-centered rehabilitation. In P. A. Linley & S. Joseph (Eds.), *Positive psychology in practice* (p. 581–597). Hoboken, NJ: Wiley & Sons.
- Delle Fave, A.; Massimini, F. (2005) The relevance of subjective well-being to social politics: Optimal experience and tailored intervention, In F. A. Huppert, N. Baylis, & B. Keverne (Eds.), *The Science of well-being* (p. 379–402). New York: Oxford University Press.
- Finneran, C. M.; Zhang, P. (2003) A Person–Artefact–Task (PAT) Model of Flow Antecedents in Computer-Mediated Environments, *International Journal of Human-Computer Studies*, 59, p. 475–496.
- Ghani, J. A.; Deshpande, S. P. (1994), Task Characteristics and the Experience of Optimal Flow in Human-Computer Interaction, *The Journal of Psychology*, 128(4), p. 381-391.
- Ghani, J. (1995) Flow in Human Computer Interactions: Test of a Model, in J. Carey (Ed.), *Human Factors in Information Systems: Emerging Theoretical Bases*, New Jersey: Ablex Publishing Corp, p. 291-311.
- Hoffman, D.L.; Novak, T.P. (1996) Marketing and hypermedia computer-mediated environments: conceptual foundations, *Journal of Marketing*, 60(3), p. 50-68.
- Hoffman, D. L.; Novak, T. P. (2009) Flow Online: Lessons Learned and Future Prospects, *Journal of Interactive Marketing* 23(1), p. 23-34.
- Ho, L. A.; Kuo, T. H. (2010) How can one amplify the effect of e-learning? An examination of high-tech employees' computer attitude and flow experience, *Computers in Human Behavior*, 26(1), p. 23-31.
- Hsu, C.; Lu, H. (2004) Why do people play on-line games? An extended TAM with social influences and flow experience, *Information and Management*, 41, p. 853–868.
- Huang, M. H (2003) Designing websites attributes to induce experiential encounters, *Computers in Human Behavior*, 19(4), p. 425-442.
- Huang, M.-H (2006) Flow, Enduring and Situational Involvement in the Web Environment: A Tripartite Second-Order Examination, *Psychology and Marketing*, 23 (May), p. 383–411.
- Jackson, S.A., (1996) Toward a conceptual understanding of the flow experience in elite athletes, *Research Quarterly for Exercise and Sport* 67 (1), p. 76–90.
- Korzaan, M. (2003) Going with the flow: Predicting online purchase intentions, *Journal of Computer Information Systems*, 43(4), p. 25–31.
- Koufaris, M., (2002) Applying the technology acceptance model and flow theory to online consumer behavior, *Information Systems Research* 13 (2), p. 205–223.
- Luna, D.; Peracchio, L. A.; de Juan, M. D. (2002) Cross-cultural and cognitive aspects of web site navigation, *Journal of the Academy of Marketing Science*, 30, p. 397–410.

- Luna, D.; Peracchio, L. A.; de Juan, M. D. (2003) Flow in Individual Web Sites: Model Estimation and Cross-cultural Validation, *Advances in Consumer Research*, 30, p. 280.
- Lutz, R. J.; Guiry, M. (1994) Intense Consumption Experiences: Peaks, Performances, and Flows, Winter Marketing Educators' Conference, February, St. Petersburg, FL.
- Maslow, A. H. (1971) *The Farther Reaches of Human Nature*, New York: Viking Press.
- Massimini, F.; Delle Fave, A. (2000) Individual development in a bio-cultural perspective, *American Psychologist*, 55, p. 24–33.
- Mathwick, C.; Rigdon, E. (2004) Play, Flow, and the Online Search Experience, *Journal of Consumer Research*, 31 (September), p. 324–332.
- Novak, T. P.; Hoffman, D. L.; Yung, Y. F. (2000) Measuring the Customer Experience in Online Environments: A Structural Modeling Approach, *Marketing Science*, 19(1), p. 22-42.
- Novak, T.P.; Hoffman, D.L.; Duhachek, A. (2003) The Influence of Goal-Directed and Experiential Activities on Online Flow Experiences, *Journal of Consumer Psychology* 13(1/2), p. 3-16.
- Privette, G. (1983) Peak experience, peak performance, and flow: a comparative analysis of positive human experiences, *Journal of Personality and Social Psychology* 45(6), p. 1361–1368.
- Privette, G.; Bundrick, Ch. M. (1987) Measurement of Experience: Construct and Content Validity of the Experience Questionnaire, *Perceptual and Motor Skills*, 65, p. 315-332.
- Richard, M.-O.; Chandra, R. (2005) A model of consumer web navigational behavior: conceptual development and application, *Journal of Business Research*, Vol. 58, p. 1019-1029.
- Sanchez-Franco, M. J. (2006) Exploring the Influence of Gender on Web Usage Via Partial Least Squares, *Behavior and Information Technology*, 25(1), p. 19–36.
- Siekpe, J. S.(2005) An Examination of the Multidimensionality of Flow Construct in a Computer-Mediated environment, *Journal of Electronic Commerce Research*, 6(1), p. 31-43.
- Skadberg, Y.X.; Kimmel, J.R. (2004) Visitors' flow experience while browsing a web site: its measurement, contributing factors and consequences, *Computers in Human Behavior*, 20(3), p. 403-422.
- Steuer, J. (1991) Defining Virtual Reality: Dimensions Determining Telepresence, *Journal of Communication* (42)4, p. 73-93.
- Trevino, L. K.; Webster, J.; Ryan, L. (1993) The Dimensionality and Correlates of Flow in Human Computer Interactions, *Computers in Human Behavior*, 9(4), Winter, p. 411-426.
- Walker, G.J.; Hull, R.B.; Roggenbuck, J.W. (1998) On-site optimal experiences and their relationship to off-site benefits, *Journal of Leisure Research* 30(4), p. 453–471.
- Webster, J.; Martocchio, J.J. (1992) Microcomputer Playfulness: Development of a Measure With Workplace Implications, *MIS Quarterly*, 16 (June), p. 201-226.
- <http://www.internetworldstats.com/stats.htm>