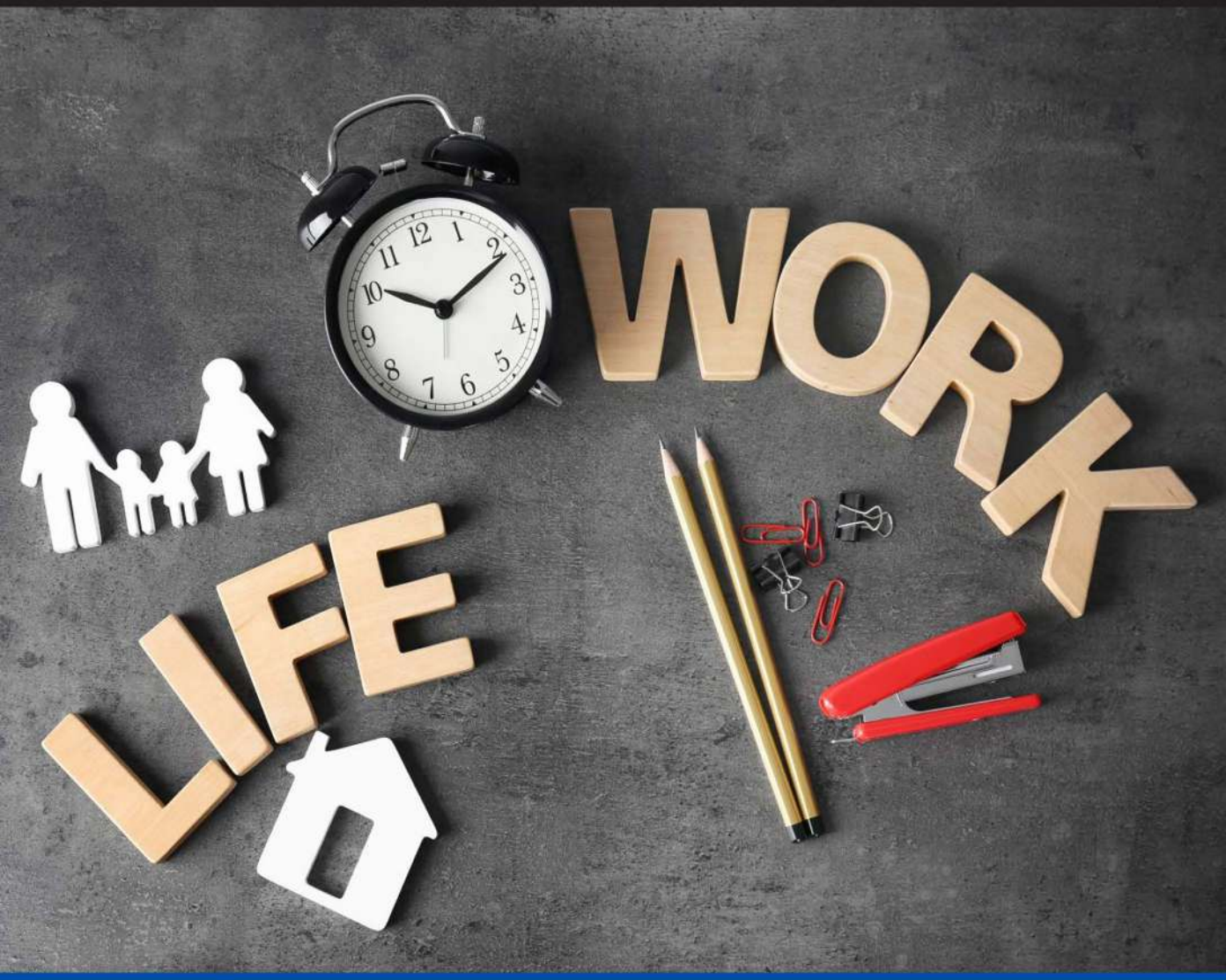
JUNE 2022 VOLUME 17, ISSUE 1

MARKET FORCES

HEC RECOGNIZED JOURNAL IN Y-CATEGORY

COLLEGE OF MANAGEMENT SCIENCES

ISSN 1816-8434 (PRINT) • 2309-866X (ONLINE)



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MARKET FORCES
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Volume 17, Issue 1
June 2022

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Cover Design and Layout by
Wings Advertising & Communications
Email: wingsadcom@gmail.com

Market Forces
College of Management Sciences

Volume 17, Issue 1, June 2022
https://doi.org/10.51153/mf.v7i1.558

Work-Life Balance and Job Performance: A Mediating and Moderating Model

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Abstract

Work-life balance has become a critical issue in the service sector, especially in the banks. Given its importance, we have developed a model with four direct and two indirect hypotheses. We developed a questionnaire based on the past studies, containing five variables and 27 indicator variables. We collected a sample of 433 responses from the private banks of Karachi non-randomly. For statistical analysis, we used the Smart PLS software. The study tested four direct and two indirect hypotheses, and we failed to reject all of them. We found that work-life balance promotes job satisfaction and psychological well-being. And job satisfaction and psychological well-being are precursors of job performance. Psychological well-being mediates work-life balance and job performance. At the same time, we found that intrinsic motivation moderates psychological well-being, work-life balance, and psychological well-being. Apart from other implications, we suggest that organizations develop policies on work-life balance, as it affects organizational performance and psychological well-being. Such policies may increase costs significantly. Thus, while developing such policies, organizations must also examine their sustainability and growth.

Keywords: *Job satisfaction, psychological well-being, work-life balance, organizational performance, intrinsic motivation.*

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Introduction

Work-life balance (WLB) is necessary for an individual's psychological well-being and happiness at work (Wood, Oh, Park & Kim, 2020). Researchers assert that the technology influence can affect WLB. Lewis (2009) believes that technology affects an organization's working environment. It may adversely affect organizational culture, work processes and work demand leading to conflict between work to family and family to work (Lewis, Anderson, Lyonette, Payne & Wood, 2017). Given this problematic issue, researchers suggest the need for more studies on the antecedents that affect employees' performance (Mäkelä & Suutari, 2011; Anwar et al., 2013; Shaffer et al., 2016). Seriously addressing these issues would positively affect society and employees' well-being. Finland and Norway have successfully developed and implemented work-family conflicts (WFC) models in their countries. Therefore, the incidences of WFC in these countries are significantly lower in Britain, France, and Portugal (MacInnes, 2006; Abendroth & Den-Dulk 2011).

Despite working virtually from home, employees may suffer from work-life conflict (WLC) if they do not have command of work-related assignments. Besides focusing on productivity and cost control, firms should not overload employees with excessive work. They should allow the employees to have sufficient time and energy to socialize with family and friends (Tausig & Fenwick, 2001; Beauregard & Henry, 2009). Like many developing countries, Pakistan faces fiscal imbalance, inflation, and trade deficit challenges. Employees in Pakistan have to work long hours to meet their financial obligations leading to WFC (Anwar et al., 2013). Long working hours adversely affect employees' personal and social lives and job performance. Both poor social life and low job performance, directly and indirectly, affect organizational performance (White et al., 2003; Anwar et al., 2013).

Balancing work and family life is more challenging for employees in the early stage of their careers. Extant literature suggests that young employees are often more dissatisfied than senior employees. Thus, the HR department should pay more attention to them to address their needs and address their worries, and frustrations (Cox, 2017). Compared to older employees, younger employees have to achieve several milestones, including getting married, building a house, and making investments for future security (Cox, 2017; Richert-Kaźmierska & Stankiewicz, 2016).

Given the above discussion, the study aims to achieve the following objectives:

1. To ascertain the impact of WLB on job satisfaction and well-being.
2. To ascertain the effect of job satisfaction and well-being on job performance.

3. To examine the mediating role of well-being on WLB and job performance.
4. To measure the moderating role of intrinsic motivation on WLB and well-being.

Conceptual Framework

To achieve the above-discussed objectives, we have developed a conceptual framework depicted in Figure 1.

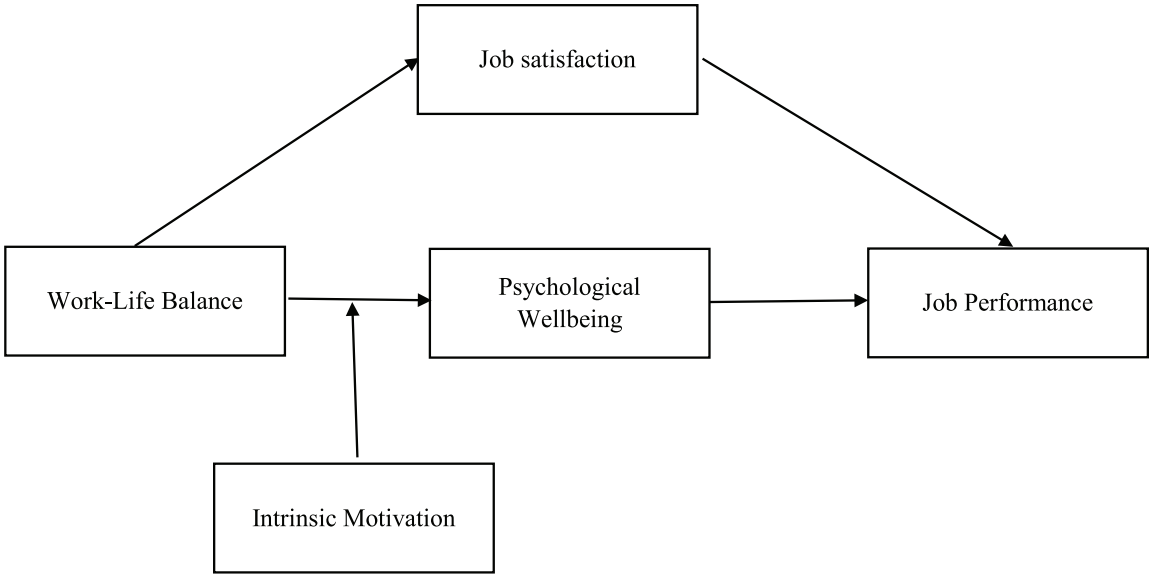

Figure 1: Conceptual Framework

Hypothesis Development

Work-Life Balance, Wellbeing, and Job Satisfaction

The two important precursors of a working environment are employees' well-being and job satisfaction (Lee, Back & Chan, 2015). These factors help employees execute their related job assignments responsibly (Khan, Butt, Abid & Rehman, 2020). Apart from the above, "psychological, physiological and environmental factors" also reflect how content employees are with their jobs. Extant literature documents that employees' quality of life at work depends on organizational culture and environmental factors. It also includes job security, career growth, and development (Tziner, Rabenu, Radomski & Belkin, 2015). Diener, Oishi, and Lucas (2003) assert that job satisfaction refers to employees' feeling of self-accomplishment, which they may get from their assigned job-related activities. Many researchers assert that psychological well-being is an employees' self-reported

life satisfaction measure (Butt, Abid, Arya & Farooqi, 2020; McAuley et al., 2000). It also aligns with a "person's cognitive and affective assessment of his life" (Abid, Ahmed, Elahi, & Ilyas, 2020). Nikolaev, Boudreaux, and Wood (2020) argue that psychological well-being promotes optimistic feelings and reduces random adverse reactions, leading to overall employee satisfaction.

Given the complex and multifaceted association between work and life, many scholars have studied it in different domains (Van-Dijke et al., 2019). Ariza-Montes, Arjona-Fuentes, Han, and Law (2018) assert that harmony between life and work promotes physical and psychological well-being in an employee. Individuals who can balance work and life are happy at work and outside, leading to job satisfaction and psychological well-being (Judge & Locke, 1993; Khan, Butt, Abid & Rehman, 2020). We found conflicting results despite the abundance of studies on the association. Many studies have used various names such as "facilitation, positive spillover, and enrichment" to describe this psychological well-being (Abid, Ahmed, Elahi & Ilyas, 2020). A few studies have examined the facets of the construct under discussion. Georgellis and Lange (2012) suggest still more research is needed from theoretical perspectives and the path that connects work life and personal life.

While reviewing the literature, we found inconsistent results on the impact of work-life on private life (Lambert, 1990). A few studies found that work-related stress in private life can be significant, but most authors believe it negatively affects private life. Research documents that individuals who spend more time and energy on work would have less time for their personal life. Consequently, this imbalance in life promotes work-family conflict and hurts psychological well-being (Robinson et al., 2014; McNall, Nicklin & Masuda, 2010). Robinson et al. (2014) argue that individuals who can adequately align the demands of work and family are happier at the workplace and have better physical and psychological well-being. Given the above theoretical discussion, we argue that:

H1: WLB stimulates job satisfaction.

H2: WLB promotes psychological well-being.

Job Satisfaction and Job Performance

Job satisfaction is a highly investigated issue globally with several consequences, including job performance (Davidescu et al., 2020). The EU statistics center reports that a majority (75.6%) of the employees in 27 European states are highly dissatisfied with their jobs (Ahn, García & Jimeno, 2004; Vyshnevskyi, 2020). For the last five decades,

managers and organizations have spent considerable resources examining the complex and ambiguous association between job satisfaction and job performance (Iaffaldano & Muchinsky, 1985). Many researchers globally have examined the association between job satisfaction, and due to its complexity, a few have called it the "Holy Grail" (Bowling et al., 2015). The extant literature documents a strong effect of job satisfaction on job performance (Loan, 2020). Yang, Chen, Lee, and Liu (2021) suggest that employees' job satisfaction profoundly affects their attitude and behavior toward their job (Tănăsescu & Ramona-Diana, 2019). Job satisfaction is a crucial element that affects people's lives (Torlak & Kuzey, 2019). Past studies have found inconclusive results on the association between job satisfaction and performance. A few studies found that job satisfaction positively affects job satisfaction, while some found it negatively associated (Muntazeri & Indrayanto, 2018; Eliyana & Sridadi, 2020). A study in the domain of nursing found that job satisfaction promotes job performance (Dinc et al., 2018). At the same time, Sony and Mekoth (2019) based on empirical evidence, found a moderate effect on job performance. Contrary to Sony and Mekoth (2019), a study found job satisfaction has a significantly small effect on employees' performance and promotion (Gellerfors et al., 2018). Given these inconclusive results, we argue that the association between job satisfaction and job performance may vary from one domain to another.

H3: Job satisfaction promotes job performance.

Psychological Well-being and Job Performance

Different researchers have defined job performance from different perspectives, But most believe it relates to fulfilling assigned duties with full responsibility (Haider, Jabeen & Ahmad, 2018). Empirical research documented that 25% of employees in the UK strongly believe a significant association exists between psychological well-being and job performance (Ahmed & Malik, 2019). It is assumed that individuals retain and nurture key resources such as spouse support and professional satisfaction, profoundly contributing to psychological well-being (Clausen, Meng & Borg, 2019). It is argued that individuals adopt behaviors that reduce resources necessary for their well-being (Whitman, Halbesleben & Holmes-IV, 2014).

Given its importance, researchers for decades have attempted to identify family-work resources that impact job performance and satisfaction (Liu, Mei, Tian & Huebner, 2016). In the context of psychological well-being, this study examines the effect of psychological well-being on job performance and the association between WLB and psychological well-being. Further, it investigates the mediating role of well-being and the moderating effect of intrinsic motivation on well-being. Many past studies have investigated and found engagement and well-being affect job performance (Robledo,

Zappalà & Topa, 2019). For example, Newman and Harrison (2008) developed a "unified attitude-engagement model" which suggests that job satisfaction and commitment are significant precursors of job performance. The study conceptualized a positive work attitude by including job satisfaction, organizational citizenship, and organizational attachment. The study aligned work attitudes to performance, leading to increased productivity. Psychological well-being thus relates to performance, engagement, and job-related attitudes (Loon, Otaye-Ebede & Stewart, 2019). Many studies have also examined well-being individually and found a positive experience promotes psychological and physical health (Huettermann & Bruch, 2019).

Cartwright and Cooper (2014) argue that a high correlation exists between healthier, productive workers and psychological well-being. It appears that psychological well-being has more causal effects on performance (Wright & Cropanzano, 2000). Frederick and Lazzara (2020) argue that individuals with healthier psychological well-being are highly optimistic, more resilient, and have an inbuilt capacity to deal with stressful issues. Psychological well-being is a significant positive predictor of personal and professional life outcomes. Researchers should explore this phenomenon holistically rather than contextually because it is associated with environmental, organizational, and societal events (Çankır & Şahin, 2018).

H4: Psychological well-being promotes job performance.

WLB, Psychological Well-Being & Job Performance

Individual behaviors towards work help achieve organizational goals (Van-Scotter and Motowidlo, 1996). McNaughton, Crawford, Ball, and Salmon (2012) argue that employees' attitudes aligned with organizational goals increase job performance. Employees with good job performances often have high career growth, higher salaries, and a good social reputation (Sonnentag & Frese, 2002). Given its importance, many studies have attempted to identify variables that directly and indirectly affect job performance. Organizations can enhance employees' work-life balance by providing supportive roles and a conducive environment that directly affects employees' well-being and organizational performance (Diener, Oishi & Lucas, 2003). Su et al. (2020) argue that organizations that can improve the work-life balance allow employees to enhance their psychological capital leading to creative performance. Many researchers, including Cartwright and Cooper (2014), have documented that employees' work-life balance stimulates psychological well-being, affecting job performance. Researchers have also used the Affective Events Theory (AET) to explain the mediating role of psychological well-being (Pradhan et al., 2016). The theory postulates that human emotions promote several personal and job-related consequences. At the same time,

researchers believe that many external and internal forces stimulate positive emotions, including work-life balance. Fredrickson (2001) asserts that psychological well-being is a causal effect of positive emotions promoting work-life balance, consequently improving job performance. Thus, researchers argue that a better work-life balance promotes psychological capital and emotions, which may affect the effect of work-life balance and job performance (Carpenter & Fredrickson, 2001). Based on the above discussion, we argue that the WLB directly and indirectly (through psychological well-being) affects job performance.

H5: Psychological well-being mediates the association between WLB and job performance.

H6: Job satisfaction mediates the association between WLB and job performance.

Moderating Effect of Intrinsic Motivation

Intrinsic motivation stimulates positive behavior in individuals, due to which their self-motivation increases. Consequently, individuals complete their assigned jobs efficiently and effectively (Dysvik & Kuvaas, 2011). An intrinsically motivated person does not need monetary or non-monetary rewards for doing their jobs efficiently (Patall, Cooper & Robinson, 2008). Researchers believe that incentive is behavior by itself. All the behavior stems from incentives (Moneta, 2012). Researchers argue that intrinsic motivation can increase the effect size of the WLB and PWB relationship. The effect size may vary from the intrinsic motivation levels that individuals have. Wiersma (1992) argues that, despite low satisfaction with WLB, intrinsically motivated employees would be more productive due to high self-motivation. Such individuals prefer to spend time at work rather than with family, friends, and peers. As a result, they have low job satisfaction and PWB. Given the theoretical discussion, we argue that:

H7: Intrinsic motivation moderates work-life balance and psychological well-being.

Methodology

Sample and Procedures

We have focused on the private banking sector of Karachi. We selected this sector because the employees in the banking sector work long hours, have excessive workloads, and suffer from work-family conflict. They can understand and appreciate the importance of work-life balance. We intercepted 450 employees and received positive responses from 433 respondents. We found many past studies in the service sector have similar response rates.

Scales and Measures

We developed a questionnaire with a demographic section and a section related to the main study based on past studies. For demographics, we articulated five questions, all based on a nominal scale. The developed questionnaire contains five latent variables and 23 items based on a five-point rating scale for the main study. Five suggests highly disagree and one highly agree. Table 1 shows the constructs sources and the number of items in each construct.

Table 1: Constructs Summary

Constructs	Sources	Reliability in Past Studies	Items
Job Satisfaction	Mitchell et al. (2001)	721 to 901	3
Psychological well-being	Diener et al. (1985)	879 to 897	5
Intrinsic Motivation	Ryan, and Connell (1989)	896 to 901	3
Work-Life Balance	Valcour (2007).	779 to 887	4
Organizatioanl Performance	Kaya (2006)	789 to 898	8

Data Analysis

The study has used the Smart PLS software for statistical analysis. It generates a measurement model and results, including "consistency, composite reliability, convergent validity, average variance extracted, and discriminant validity."

Respondents Profile

The study results show that of the total respondents, 25% were Grade-1 officers, 35% were Grade-2 officers, and 40% were Grade-3 officers. The number of female respondents was low. Only 35% were female, and 65% were male. Marital status suggests that 41% were married and 59% were single. The education profile suggests that 68% of respondents had Bachelor's degrees, and 32% had Master's degrees. Only 20% of the respondents had a banking diploma, and the rest, 80%, were in the process of completing the banking diploma or had no interest in acquiring one.

Results

Table 2 summarizes the results related to the descriptive analysis, inclusive of "internal consistency and univariate analysis."

Table 2: Descriptive Statistics

	Cronbach's Alpha	Mean	SD	Skewness	Kurtosis
Intrinsic Motivation	0.844	3.913	1.855	1.853	0.853
Job Performance	0.856	4.222	2.608	-0.374	-2.150
Job satisfaction	0.835	3.543	1.763	0.616	2.178
Psychological Wellbeing	0.691	4.542	1.754	-1.762	-1.710
Work-Life Balance	0.848	3.876	2.567	2.489	1.629

The results show that Cronbach's Alpha values range from 0.691 to 0.856. The lowest value is for Psychological-wellbeing (α=0.691, Mean=4.542, SD=1.754), and the highest is for job performance (α=0.856, Mean=4.222, SD=2.608). At the same time, the Skewness and Kurtosis values range from -2.5 to +2.5. Thus, we can infer that the constructs used in the study do not deviate from the requirements of internal consistency and univariate normality.

Convergent and Discriminant Validity

The study has depicted a summary of results related to convergent and discriminant validity in Table 3.

Table 3: Convergent Validity & Discriminant Validity

	Composite Reliability	Average (AVE) Variance Extracted	IM	JB	JS	PWB	WLB
Intrinsic Motivation	0.889	0.616	0.785				
Job Performance	0.912	0.777	0.51	0.881			
Job satisfaction	0.889	0.666	0.559	0.253	0.816		
Psy. Wellbeing	0.822	0.608	0.503	0.745	0.234	0.779	
Work-Life Balance	0.908	0.768	0.532	0.49	0.447	0.486	0.876

The results fulfill the requirements of convergent validity since all-composite values are greater than 0.70 and AVE values are greater than 0.60. We have also inferred that all the constructs are unique since "AVE squared values are greater than the Pearson correlation values."

Predictive Power of the Model

We have assessed the predictive power of the model based on the R squared values depicted in Table 4 and Q squared values depicted in Table 5. Since the R squared values are greater than 0.10, and Q squared values are greater than zero, suggesting the model has an appropriate "predictive power."

Table 4: Predictive Power (R-squared values)

	R-squared	Adjusted R-squared
Job Performance	0.561	0.560
Job satisfaction	0.200	0.199
Psychological Wellbeing	0.324	0.323
Work-Life Balance	0.283	0.282

Table 5: Predictive Power (Q-squared values)

	SSO	SSE	Q^2 (=1-SSE/SSO)
Intrinsic Motivation	5990	5990	
Job Performance	3594	2042.395	0.432
Job satisfaction	4792	4176.687	0.128
Moderating Effect 1	1198	1198	
Psychological Wellbeing	3594	2924.932	0.186
Work-Life Balance	3594	2818.741	0.216

Fit Indices

The fit indices presented in Table 6 show that SRMR values are less than 0.08 and NFI values greater than 0.80, suggesting that the model fits adequately.

Table 6: Fit Indices

	Saturated Model	Estimated Model
SRMR	0.069	0.079
d_ULS	1.431	2.502
d_G	0.467	0.532
Chi-Square	3249.095	3571.678
NFI	0.843	0.817

SEM Results

The study has tested four direct hypotheses and three indirect, presented in Table 7. The "Measurement and Structural models are provided in Figures 2 and 3."

Table 7: SEM Results

	Beta	T Stat	P-Value	Results
Direct Hypothesis				
Work-Life Balance -> Job satisfaction (H1)	0.447	16.916	0.000	Accepted
Work-Life Balance -> Psychological Wellbeing (H2)	0.322	9.421	0.000	Accepted
Job satisfaction -> Job Performance (H3)	0.083	3.674	0.000	Accepted

Psychological Wellbeing -> Job Performance (H4)	0.725	51.674	0.000	Accepted
Indirect Hypothesis				
WLB -> Psy. Wellbeing -> Job Per. (H5)	0.234	9.07	0.000	Accepted
WLB -> Job sat. -> Job Per. (H6)	0.037	3.446	0.001	Accepted
Moderating Effect 1 -> Psy Wellbeing -> Job Per (H7)	-0.070	2.622	0.009	Accepted

Our results support all seven hypotheses. We found the largest effect size in the direct hypothesis is on the association between "psychological well-being and job performance," and the lowest is in the relationship of "job satisfaction and job performance." In the indirect hypothesis, the largest effect size on mediating relationship of psychological well-being, and the lowest is for the moderating impact of psychological well-being.

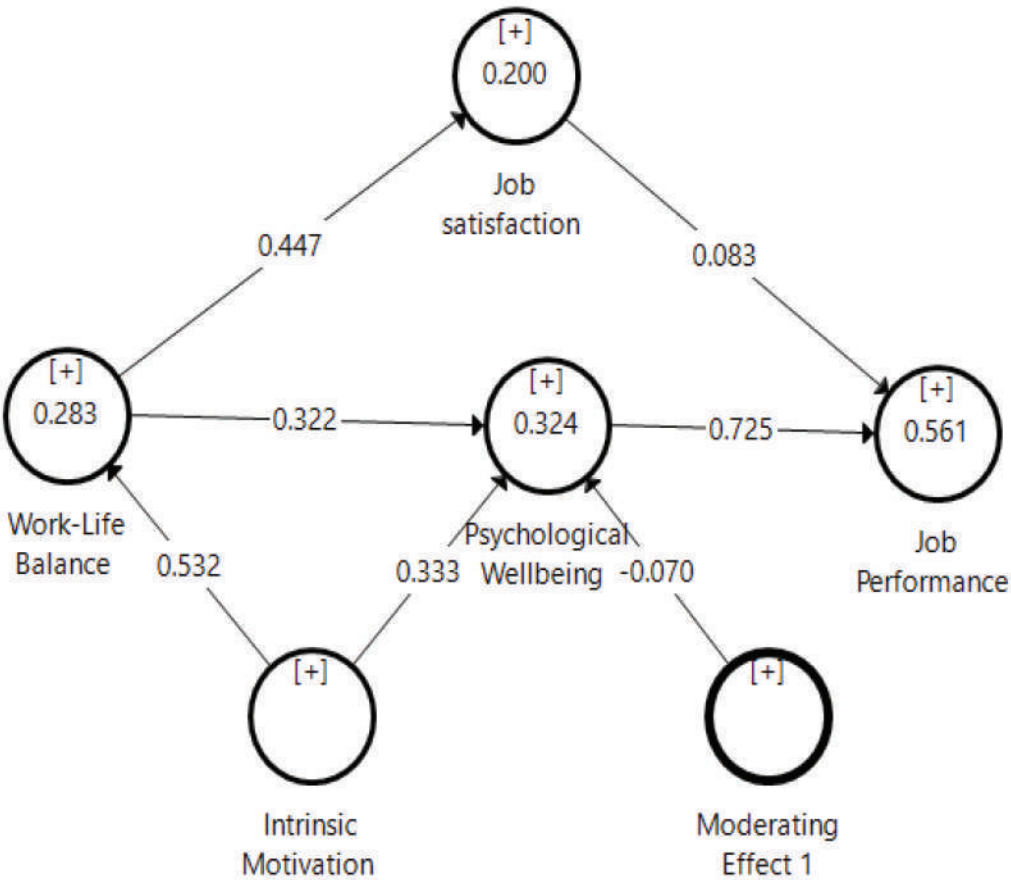

Figure 2: Measurement Model

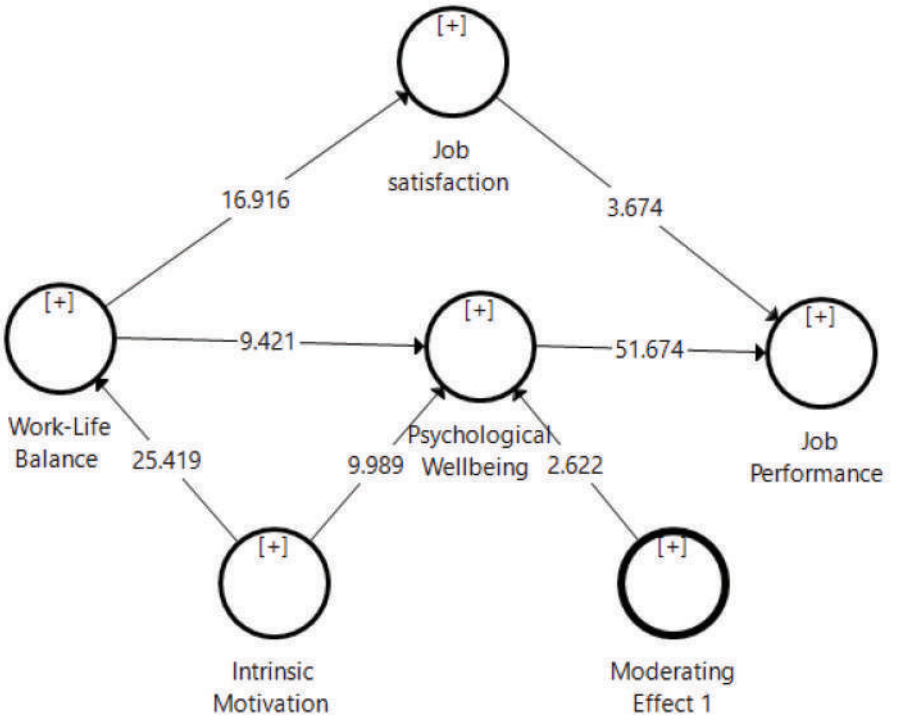

Figure 3: Structural Model

Discussion and Conclusion

Discussion

We in this section have aligned the results and the related literature. In hypotheses 1 and 2, we postulated "work-life balance promotes job satisfaction" and "work-life balance affects psychological well-being." The results support these hypotheses and align with many past studies. Empirical research documents that 25% of employees in the UK strongly believe a significant association exists between psychological well-being and job performance (Ahmed & Malik, 2019). It is assumed that individuals retain and nurture key resources such as spouse support and professional satisfaction, profoundly contributing to psychological well-being (Clausen, Meng & Borg, 2019). It is also argued that individuals adopt behaviors that reduce resources necessary for their well-being (Whitman, Halbesleben, & Holmes, 2014).

Given its importance, researchers for decades have attempted to identify family-work resources that impact job performance and satisfaction (Liu, Mei, Tian & Huebner, 2016). In the context of psychological well-being, this study examines the effect of

psychological well-being on job performance and the association between WLB and psychological well-being. Further, it also investigates the mediating role of well-being and the moderating effect of intrinsic motivation on well-being.

Hypotheses 3 proposed that "job satisfaction affects job performance." Our results failed to reject this hypothesis and are consistent with the past literature. Job satisfaction is a highly investigated issue globally with several consequences, including job performance (Davidescu et al., 2020). EU statistics center reports that a majority (75.6%) of the employees in 27 European States are highly dissatisfied with their jobs (Ahn, García & Jimeno, 2004; Vyshnevskyi, 2020). For the last five decades, managers and organizations have spent considerable resources examining the complex and ambiguous association between job satisfaction and job performance (Iaffaldano & Muchinsky, 1985).

Hypothesis 4 suggests that "job satisfaction promotes organizational performance," Our results support this hypothesis, which is also in line with many past studies. Cartwright and Cooper (2014) argue that a high correlation exists between healthier, productive workers and psychological well-being. It appears that psychological well-being has more causal effects on performance (Wright & Cropanzano, 2000). Frederick and Lazzara (2020) argue that individuals with healthier psychological well-being are highly optimistic, more resilient, and have an inbuilt capacity to deal with stressful issues. Psychological well-being is a significant positive predictor of personal and professional life outcomes. Researchers should explore this phenomenon holistically rather than contextually because it is associated with environmental, organizational, and societal events (Çankır & Şahin, 2018).

Our results also support Hypothesis 5, which states that "psychological well-being mediates work-life balance and job performance." Many researchers, including Cartwright and Cooper (2014), have documented that employees' work-life balances stimulate psychological well-being, affecting job performance. Researchers have also used the affective events theory (AET) to explain the mediating role of psychological well-being (Pradhan et al., 2016). The theory postulates that human emotions promote several personal and job-related consequences. At the same time, researchers believe that many external and internal forces stimulate positive emotions, including work-life balance. Fredrickson (2001) asserts that psychological well-being is a causal effect of positive emotions promoting work-life balance, consequently improving job performance. Thus, researchers argue that a higher work-life balance promotes psychological capital and emotions, which may enhance or decrease the effect of work-life balance and job performance (Carpenter & Fredrickson, 2001).

Hypothesis 7 proposed that "intrinsic motivation moderates work-life balance and psychological well-being." An intrinsically motivated person does not need monetary or non-monetary rewards for doing the job efficiently (Patall, Cooper & Robinson, 2008). Researchers believe that incentive is behavior by itself. All the behavior stems from incentives (Moneta, 2012). Researchers argue that intrinsic motivation can increase the effect size of WLB and SWB relationship. The effect size may vary on the intrinsic motivation levels individuals have. Wiersma (1992) argues that, despite low satisfaction with WLB, intrinsically motivated employees would be more productive due to high self-motivation. Such individuals prefer to spend time at work rather than with family, friends, and peers. As a result, they have low job satisfaction and SWB.

Conclusion

The service sector, especially the banking sector, has issues related to work-life balance. Given its importance, we collected data from the local private banks on the different aspects of work-life balance. Based on 433 respondents, the study tested four direct and two indirect hypotheses, and we failed to reject all of them. We found that work-life balance promotes job satisfaction and psychological well-being. And job satisfaction and psychological well-being are precursors of job performance. Psychological well-being mediates work-life balance and job performance. At the same time, we found intrinsic motivation moderates psychological well-being, moderates work-life balance, and psychological well-being.

Practical Implications

Organizations must develop policies on work-life balance, as it affects organizational performance and psychological well-being. Such policies may increase costs significantly. Thus, while developing such policies, organizations must also examine their sustainability and growth. Employees' satisfaction is necessary for increasing organizational performance, which significantly correlates with work-life balance and psychological well-being. Organizations may not benefit from expensive work-life balance policies if they fail to create a conducive environment that directly and indirectly affects satisfaction and organizational performance. Employees' perception of fairness is necessary for trust and confidence in an organization as it promotes work engagement and intrinsic motivation. Intrinsic motivation has a moderating effect on work-life balance and psychological well-being. Building such capacity is important as highly intrinsic employees are less sensitive to work-life balance. Such employees prefer to spend time at work and are not concerned about socializing with family and peers.

Psychological well-being directly affects job performance and mediates work-life balance and organizational performance. Thus, besides work-life balance policies,

organizations should explore other factors that could affect employees' psychological well-being. For example, the attitude and behavior of the leaders and coworkers affect psychological well-being. Employees are afraid to report aggressive behavior as employees fear retaliation from coworkers and leaders. Organizations have to develop an effective mechanism that allows employees to report the incidences of aggressive behavior. Research suggests that employees often perceive being abused, which is far from reality. Thus, counseling and courses on emotional intelligence are necessary for the employees. Emotional intelligence helps employees to deal with different behavior adequately. They learn to anticipate the expected behaviors of the employees. It allows them to have sufficient time to react.

Limitations and Future Research

The study has focused on the banking sector of Karachi, Pakistan since its employees have long working hours. They can understand and appreciate issues related to work-life balance. Employees in other service and manufacturing sectors also face similar problems, which other researchers can explore. Karachi, compared to other cities, has peculiar characteristics. Therefore, we recommend future researchers to extend our model to other cities. Also, future researchers may use other cultural aspects in their models. We in the study have used intrinsic motivation as a moderator and social well-being as a mediator. Other organizational-related factors also indirectly affect organizational performance, which the other researchers can use in their studies.

Annexure 1

Constructs and Items used in the Questionnaire

Job Satisfaction
JS1. All in all, I am satisfied with my job.
JS2. In general, I do not like my job.
JS3. In general, I like working here.
Psychological well-Being
PWB1.In most ways, my life is close to my ideal.
PWB2. The conditions of my life are excellent.
PWB3.I am satisfied with my life.
PWB4. So far, I have gotten the important things I want in life.
PWB5. If I could live my life over, I would change almost nothing.
Intrinsic Motivation
IM1. I enjoy the work itself.
IM2. I find the work interesting.
IM3. I find the work engaging.
Work-Life Balance
WLB1. How well do you divide your time between work and family life.
WLB2. How well does your work life and family life fit together.
WLB3. Your ability to balance your job and your personal or family life needs.
WLB4. The opportunity your job provides for attending to home demands.
Organizational Performance
OP1. The organization experiencing adequate sales growth.
OP2. The organization has captured a sufficient market share.
OP3. The organization is generating a sufficient return on sales.
OP4. The organization is generating a sufficient return on assets.
OP5. The organization has a good profitability position.
OP6. The organization provides good service quality to its customers.
OP7. The organization has adequate service development capability.
OP8. The employees of the organization are satisfied with their job.

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Market Forces
College of Management Sciences

Volume 17, Issue 1, June 2022
https://doi.org/10.51153/mf.v7i1.519

Empirical Analysis of Fiscal Imbalance in Pakistan

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Abstract

Fiscal imbalance adversely affects an economy. It enhances inflation, reduces development, and consequently, the government and people suffer. This phenomenon is more common in developing countries with reliance on natural resources and agriculture. Given the importance of fiscal imbalance, this research incorporates vital macroeconomic determinants that have a significant association with the fiscal imbalance of Pakistan. This article analyses the relationship between a fiscal imbalance concerning vital macroeconomic indicators. We have taken dependent variables such as fiscal imbalance and independent variables such as total debt service, trade, broad money, current account balance, net inflows, government expenditure, and government income as a percentage of GDP. In contrast, GDP per capita, total debt service, GDP deflator, and foreign direct investment data were collected from 1970 to 2019. The results revealed a long-run association between the dependent and independent variables, and there is a short-run relationship between fiscal imbalance and GDP per capita. This research conclusively represents the impact of macroeconomic indicators on Pakistan's fiscal imbalance in the short and long term.

Keywords: *Keynesian school of thought, macroeconomic indicators, fiscal imbalance, autoregressive distributed lag model.*

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Introduction

Pakistan's economy has suffered due to fiscal imbalances for the last few decades. Given its importance, many studies have examined the effect of different macroeconomic indicators on the fiscal imbalance of Pakistan. In Pakistan, the fiscal deficit was very high from 1977 to 2018, about 5.2% of the gross domestic product. According to King et al. (2012), Pakistan's gross domestic product has fallen over the last few years. Apart from other factors, poor fiscal policies have contributed to slow development. Also, poor credit policy has contributed to slow GDP growth. Several past studies have documented a significant association between fiscal policy and a high inflation rate in an economy (Kydland & Prescott, 1982). At the same time, the gross domestic product rate was about 5% in the same era. Significant instability in inflation was the primary cause of economic deterioration. Almost all the macroeconomic indicators have contributed to fiscal insufficiencies, the growth rate for the gross domestic product, and inflation (Selvarajan & Ab-Rahim, 2020). According to Awan et al. (2020), the fiscal policy's focus is to stabilize an economy's progression, reduce poverty and inflation, and create employment opportunities to develop human resources. In the present era, many countries face challenges like huge debt, energy crises, and a reduction in the currency's value. Poor fiscal policy has contributed to these discussed effects. The state should make policies that minimize unnecessary expenses and enhance those resources that generate revenue. The government should encourage consumers to invest in the productive sector, which is necessary for growth and sustainability (Sima, Gheorghe, Subićs & Nancu, 2020).

Since 1947, the economic performance of Pakistan has been inconsistent and unsatisfactory. Canzoneri et al. (2011) and Leeper and Leith (2016) found that many developing countries, rather than increasing revenues, have mainly focused on bridging the fiscal gap through debt servicing. Consequently, in the last few years, developing countries suffered due to decreased growth rates, high inflation, and a deficit in the balance of payments. Also, continuous devaluation in the local currency has adversely affected the balance of payments (Chaudhry & Munir, 2010; Ribeiro, McCombie & Lima, 2017). Studies conducted by Gounder, Narayan, and Prasad (2007) argue that a suitable fiscal policy is vital for developing an economy. An appropriate fiscal policy mitigates employment and production variation and promotes economic stability. A fiscal deficit significantly depends on state expenses and revenues. If the policymakers focus on reducing expenditures and increasing revenues, the budget deficit can be reduced (Li & Du, 2021). A study conducted by Ahmed and Mashkoor (2016) suggests that the government can control an imbalance through extensive, cost-effective development by exploring and extracting natural resources. Those natural resources, apart from others, are the availability of pure and clean water for drinking, cultivating plants, and

enlarging forest areas. It would mitigate flood risk and create a safe country. Moreover, many researchers believe that efficiency in agriculture and investing in natural resources can increase revenue, resulting in a positive fiscal imbalance (Li & Du, 2021).

Third-world countries face many problems in which the fiscal imbalance is significant. In Pakistan, the disparity in fiscal budget promotes variation of prices in goods and services. The primary causes of inflation in the country are the expansion in monetary policy, inequity of fiscal policy, inadequate financials, and slow economic growth (Rathnayake, 2020). Pakistan is not dissimilar from various nations where there is fiscal imbalance. The main cause of inflation and hyperinflation is the increased money supply (Ahmed & Mashkoor, 2016; Rozeff, 1994).

Given the above discussion, the study would address the following research questions:

1. Is there any relationship between fiscal imbalance and GDP per Capita?
2. Is there any relationship between fiscal imbalance and total debt service as a % of GDP?
3. Is there any relationship between fiscal imbalance and trade as a % of GDP?
4. Is there any relationship between fiscal imbalance and broad money as a % of GDP?
5. Is there any relationship between fiscal imbalance and GDP deflator?
6. Is there any relationship between fiscal imbalance and current account balance as a % of GDP?
7. Is there any relationship between fiscal imbalance and foreign direct investment, net inflows as a % of GDP?
8. Is there any relationship between fiscal imbalance and government expenditure as a % of GDP?
9. Is there any relationship between fiscal imbalance and government income as a % of GDP?

Review of Literature

Every economist has a different view about the relationship between fiscal imbalancesand economic development. Because of the above discussion, Neoclassical economists do not favor deficit financing. Keynes identified that scarcity has a positive relationship with the economy's growth in the long run. When a government raises expenses, it diminishes poverty and inflation in the long run. Government expenses are a significant part of aggregate demand. When aggregate demand decreases, the government raises its costs, increasing the aggregate demand and generating economic activities in a country.

According to the "Ricardian Equivalence theory," financial deficit and economic development have no connection. Theodore (2020) argues that financial shortage cannot rejuvenate economic development. This theory explains the impact of deficit financing on economic growth. Gulcan and Bilman (2005) analyzed the "impact of budget deficit on the Turkish economy." The authors found a long-term association between budget deficit and economic development. They based their conclusion on the data set from 1960 by applying the Engle-Granger cointegration method and ECM approach. Ali and Ahmad (2010) studied "the impact of fiscal strategy on financial development in Pakistan." They utilized published data from 1972 - 2008 and employed the "Autoregressive Distributed Lag (ARDL)" model to examine the long-run relationship between the variables. Their results support the Keynesian viewpoint suggesting a positive association between fiscal deficit and GDP in the long run.

Fatima et al. (2011) researched the "impact of fiscal deficit on financial development in Pakistan." The authors used data from 1980-2009 and used the two stage least squares model (2SLS). They found that fiscal deficit adversely affects GDP progress. Abd-Rahman (2012) and Rahman (2012) studied "the connection between budget shortfall and financial development from the Malaysian point of view." They found an insignificant association between budget shortfall and economic development using the "Auto Regressive Distributed Lag Model (ARDL)." Mohanty (2012) evaluated the "relationship between fiscal deficit and economic growth in India". The Johanssen cointegration method was employed to draw the results. The author concluded a positive but insignificant long-term association between budget shortfall and financial development.

Ahmad et al. (2013) examined the connection between "exchange rates and economic growth during 1975-2011". Using the "ordinary least squares (OLS) technique" and "CUSUM test," the author documented that inflation rates, exchange rates, and capital development adversely influence the economy while FDI positively stimulates the economy. A study on "fiscal shortage and financial development in Pakistan" found a non-linear association between budget deficits and GDP growth rate (Iqbal et al., 2017). This study arrived at this conclusion based on a data set from 1972 to 2014 by utilizing the STAR model. Moreover, the fiscal deficit measure can be equally important while analyzing the impact of budget shortfall on inflation. The budgetary shortfall has two effects; one that causes an inflationary effect and the other that does not (Pekarski, 2011). Tiwari et al. (2012) assert that government expenses stimulate fiscal deficits. However, researchers believe that the government's extensive revenue expenditure reduces the share capital expenditure leading to inflation and reduced economic activity. At the same time, the government's capital expenditure generates economic activities in the

long run (Tiwari et al., 2012). Apart from the fiscal shortage, the factors like oil costs, food costs, conversion rates, trading transparency, and development ratio of the economy also promote inflation.

Food inflation is a global issue hurting all income groups. However, its impact is more significant in developing countries like Pakistan. Studies have documented that global food inflation in the last two years has also stimulated food inflation in Pakistan (Hanif, 2012). In Pakistan, most people live below the poverty level, due to which most of them are undernourished. Extant literature also suggests that trading deficiencies also promote inflation in Pakistan (Faridi & Nazar, 2013). Economists have different views on the trade deficit in an economy because many factors promote trade deficits (Lin & Chu, 2013). For example, many studies found that Japan and Germany registered moderate economic growth despite the surplus trade deficits. At the same time, the US economy realized significant economic growth despite a surging trade deficit (Nasir & Leung, 2021). Ahmad and Muhammad (2010) analyzed the tax-related factors of 25 underdeveloped nations by utilizing the cross-sectional data from 1998 to 2008. The agriculture segment demonstrated a positive impact on the service industry. At the same time, monetization and spending shortfall demonstrated a positive effect, while development in allowances showed an adverse impact on tax-related factors. Excessive money supply adversely affects the stock cost, as many consumers prefer to invest in tangible assets rather than monetary assets. Many studies in the developed nations also found a negative association between money supply and stock prices (Boztosun, 2010; Osamwony Evayiro-Osagie, 2012; Rozeff, 1994).

Methodology

Many microeconomic and macroeconomic indicators have a significant impact on the fiscal imbalance. It is impossible to include all the indicators in one study. We have drawn a sample of 10 macroeconomic indicators from archival databases. Variables include the fiscal imbalance (Y) as the dependent variable and GDP per capita (constant 2010 US$), total debt service (% of GNI), trade (% of GDP), broad money (% of GDP), GDP deflator (base year varies by country), current account balance (% of GDP), foreign direct investment, net inflows (% of GDP), GE % of GDP, and GI % of GDP as independent variables. The data was collected from 1970 to 2019. We have collected data from the archival databases of the World Bank, International Monetary Fund (IMF), and Pakistan Bureau of Statistics (PBS). The data was analyzed in Eviews-10. We started by analyzing non-stationary variables, a prerequisite for time series modeling. The Autoregressive Distributed Lagged (ARDL) model was used for analysis. We dropped several variables discussed in the results section based on this analysis. We also used the correlations matrix to identify and drop variables that have multicollinearity issues.

Results and Analysis

Descriptive Statistics

Table 1 depicts the descriptive statistics of all the dependent and independent variables.

Table 1: Descriptive Statistics

Descriptive Stats	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9
Mean	11.04	780.22	3.31	31.29	45.63	76.67	-2.94	0.75	1.06	0.95
Median	11.17	794.61	3.18	32.61	44.86	34.22	-3.13	0.57	1.06	0.94
Maximum	18.35	1197.91	6.63	38.50	59.04	286.31	4.82	3.67	1.12	1.02
Minimum	6.58	450.38	1.34	15.82	34.00	3.39	-9.20	-0.06	0.99	0.88
Std. Dev.	2.72	217.29	1.32	4.89	6.69	86.74	2.50	0.77	0.04	0.04
Skewness	0.42	0.11	0.48	-1.29	0.42	1.16	0.74	2.29	-0.14	0.16
Kurtosis	2.85	1.98	2.65	4.87	2.30	2.93	4.81	8.38	1.94	1.70
Jarque-Bera	1.51	2.25	2.17	21.23	2.50	11.21	11.43	103.98	2.48	3.76
Probability	0.47	0.33	0.34	0.00	0.29	0.00	0.00	0.00	0.29	0.15
Sum	552.07	39010.85	165.50	1564.70	2281.66	3833.59	-147.17	37.27	52.90	47.38
Sum Sq. Dev.	363.72	2313447.00	84.84	1171.26	2192.09	368658.10	307.43	29.38	0.06	0.08
Observations	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00

Total debt service (% of GNI) – (X2) was recorded at 3.31% on average in the sample period. The highest value was 6.63%, and the minimum was 1.34%. Total Debt Services % of GNI suggests little volatility in the last five decades, suggesting stability and no anomalies in the sample. Trade as a % of GDP (X3) is one of the key indicators of this research. Its share, on average, is 31.29% of GDP, suggesting a huge share from an economic perspective. The results suggest some cyclicality in the last five decades, illustrated by the value of the standard deviation of 4.89. X4 represents Broad Money (% of GDP) with an average of 45.63%. At the same time, Pakistan's currency depreciated due to Covid-19 and other inappropriate policies. Apart from the above variables, we dropped some variables from our main analysis due to statistical problems.

Correlation Analysis

The study performed correlation analysis to identify the association between the variables. The results are presented in Table 2.

Table 2: Correlations Matrix

	X1	X2	X3	X4	X6	X7	X8	X9
X1	1							
X2	-0.25	1						
X3	0.18	0.46	1					
X4	0.73	-0.42	-0.07	1				
X6	0.11	0.05	-0.16	-0.22	1			
X7	0.53	-0.19	0.31	0.54	-0.27	1		
X8	0.05	-0.25	0.26	0.19	-0.42	0.02	1	
X9	0.15	-0.23	0.11	0.21	-0.01	-0.28	0.75	1

The correlation analysis indicated that the variable X5 significantly correlates with other variables suggesting a collinearity issue; therefore, we dropped it. Table 2, presented above, shows that after dropping X5, the rest of the variables have no multicollinearity issue.

Regression Equation

After dropping the variables as discussed above, the final regression equation is as follows:

$$Y_{FI} = \boldsymbol{\beta}_1(x1) + \boldsymbol{\beta}_2(x2) + \boldsymbol{\beta}_3(x3) + \boldsymbol{\beta}_4(x4) + \boldsymbol{\beta}_6(x6) + \boldsymbol{\beta}_7(x7) + \boldsymbol{\beta}_8(x8) + \boldsymbol{\beta}_9(x9) + \in$$

While testing the above regression equation, we found the variables X8 and X9 do not fit the model; therefore, we dropped them.

Distributed Lag Equations

We have developed an ARDL model presented in Table 3, followed by the model selection criteria presented in Table 4.

Table 3: ARDL Model for Long Term Relationship

Dependent Variable: D(Y)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.134688	5.649348	-0.023841	0.9811
D(Y(-1))	-0.074411	0.249559	-0.298171	0.7676
D(Y(-2))	-0.107497	0.193712	-0.554934	0.5829
D(X1(-1))	0.063761	0.034792	1.832596	0.0765
D(X1(-2))	0.016516	0.03522	0.468948	0.6424
D(X2(-1))	-0.857624	0.559618	-1.532518	0.1355
D(X2(-2))	-0.510707	0.574706	-0.88864	0.381
D(X3(-1))	0.124304	0.134391	0.92494	0.3621
D(X3(-2))	0.129806	0.134198	0.967274	0.3409
D(X4(-1))	-0.202464	0.12315	-1.644045	0.1103
D(X4(-2))	0.147518	0.133175	1.1077	0.2765
Y(-1)	-0.313532	0.251108	-1.248592	0.2212
X1(-1)	-0.002136	0.00341	-0.626498	0.5356
X2(-1)	0.406175	0.433868	0.936171	0.3564
X3(-1)	0.012151	0.11783	0.10312	0.9185
X4(-1)	0.04844	0.12359	0.391945	0.6978

Model Selection Criteria

Based on the model selection criteria presented in Table 4, we finalized the model. The two lags model is the best, most suited, and most accurate model to represent the relationship of economic indicators to the fiscal deficit as a % of GDP.

Table 4: Model Selection Criteria

Information Criterion	6 Lags	4 Lags	2 Lags	Minimum
Akaike info criterion	4.476264	4.795845	4.706069	4.476264
Schwarz criterion	5.950757	5.839695	5.335906	5.335906
Hannan-Quinn criteria.	5.020012	5.184982	4.943081	4.943081

Diagnostic Test

Most models require some diagnostic tests. We have used the serial correlation (LM) diagnostic test to check if the model suffers from autocorrelation.

Table 5: Diagnostic Test for Long Term Model Appropriateness

Breusch-Godfrey Serial Correlation LM Test			
F-statistic	1.05489	Prob. F(2,29)	0.3612
Obs*R-squared	3.18741	Prob. Chi-Square(2)	0.2032

The diagnostic results show that the p-values are more than 0.05 or 5%, which suggests no autocorrelation in the model.

CUSUM Test

The study has used the CUSUM test to examine the model stability. Figure 1 indicates that the blue line is not intersecting the red lines. Thus, Figure 1 suggests that the model is stable.

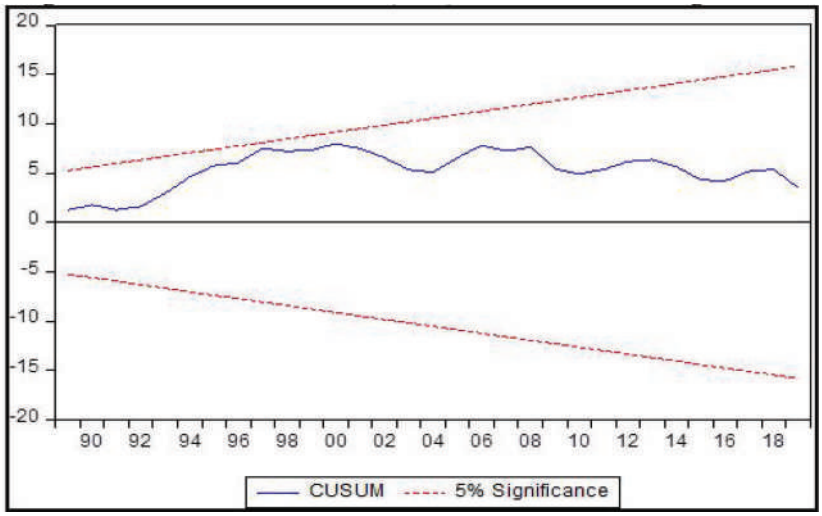

Figure 1: Stability Diagnostic – Recursive Estimates (OLS) CUSUM Test – Long Term

The Final Model of Long-Run Relationship

We used the Wald-test to examine the long-short relationship between independent and dependent variables. We have summarized the results in Table 5. The null hypothesis suggests that all the coefficients are equal, and the alternative hypothesis suggests all coefficients are different.

Table 5: Final Model of Long-Run Relationship

Test Statistic	Value	df	Probability
F-statistic	0.868966	(5, 31)	0.513
Chi-square	4.344832	5	0.5009
Null Hypothesis: C(12)=C(13)=C(14)=C(15)=C(16)=0			

The results show that all the p-values are greater than 0.05; therefore, we have accepted the null hypothesis suggesting that the coefficients of all estimators are equal and have no long-run relationship. The study has also cross-checked the long-term relationships using the appropriate critical values. Since the F-statistic is greater than upper bound values, we have rejected the null hypothesis and accepted the alternative hypothesis. Thus, we find that X1, X2, X3, X4, and Y don't move together, meaning these variables do not have a long-run relationship

Pakistan has a low GDP per capita, suggesting individuals' contributions towards GDP are also low. Hence, the ARDL model did not suggest a long-run association between GDP and fiscal imbalance (Agarwal, Mishra & Gupta, 2019). In the last five decades, Pakistan's GDP had a steady growth rate, but it is not adequate considering the population growth rates and other adverse factors (Ahmed, 2010). Past studies found an association between GDP fiscal imbalances. Factors such as ever-increasing governmental expenditures and poor fiscal policies contributed to the discussed association (Catão & Terrones, 2005). Pakistan has borrowed heavily from foreign countries and IMF in the last few decades to service its foreign debts. Also, the government of Pakistan borrowed heavily from local sources. These variables have significantly contributed to debt financing (Agarwal, Mishra & Gupta, 2019). The two broad segments of Pakistan's economy include the service and agricultural sectors. Given this constraint, Pakistan's export of finished goods is nominal compared to other neighboring countries (Samimi et al., 2012). Compared to neighboring countries, Pakistan exports raw materials and imports finished goods. This suggests the trade-in percentage to GDP fiscal balance move separately, suggesting no long-term relationship between these variables and fiscal imbalance (Feldstein, 2002; Hakkio, 1998; Zakrai, 2010). Broad money is a measure of money in circulation or money supply. It is inclusive of "narrow money." Our results did not find any long-term co-movement between broad money as a % of GDP and fiscal deficit (Urata, 2020; Were, 2001; Zakrai, 2010).

ARDL Model for Short Term Relationship

Table 6 exhibits the speed of adjustment to achieve equilibrium. The study has derived the ECT (error correction term) from the residuals of the multiple regression model for determining the long-term relationship. The benchmark for the long-term relationship is that ECT should be significant and greater than -1. The study found that the whole system achieves equilibrium in the long run at a speed of 125%,

Table 6: ARDL Model for Short Term Relationship

	Dependent Variable: D(Y)			
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	0.749455	1.278843	0.586041	0.5636
D(Y(-1))	1.038706	0.565141	1.837958	0.079
D(Y(-2))	-0.03343	0.227287	-0.147084	0.8843
D(Y(-3))	0.0776	0.234968	0.330257	0.7442
D(Y(-4))	-0.207904	0.19685	-1.056156	0.3019
D(X1(-1))	0.072513	0.031677	2.289119	0.0316
D(X1(-2))	-0.098829	0.055288	-1.787532	0.087
D(X1(-3))	-0.07143	0.038344	-1.862857	0.0753
D(X1(-4))	0.039417	0.03637	1.083773	0.2897
D(X2(-1))	-0.610125	0.479945	-1.271241	0.2163
D(X2(-2))	0.123341	0.658558	0.18729	0.8531
D(X2(-3))	-0.016821	0.653077	-0.025757	0.9797
D(X2(-4))	-0.592746	0.709366	-0.8356	0.412
D(X3(-1))	0.107729	0.180631	0.596404	0.5567
D(X3(-2))	-0.038301	0.142377	-0.269014	0.7903
D(X3(-3))	-0.100326	0.137352	-0.730432	0.4725
D(X3(-4))	0.198558	0.122717	1.618015	0.1193
D(X4(-1))	-0.132238	0.169753	-0.779002	0.4439
D(X4(-2))	0.509209	0.186866	2.724996	0.0121
D(X4(-3))	-0.292387	0.173335	-1.686833	0.1052
D(X4(-4))	0.121997	0.130897	0.932004	0.361
ECT(-1)	-1.252627	0.61797	-2.027001	0.0544

Diagnostic Test for Short Term Model

Like the long-run model discussed above, we have used a diagnostic test to deal with the autocorrelation problem in the model. We have adopted the serial correlation LM Test. The p-value was more than 0.05. Therefore, we accepted the null hypothesis, suggesting no autocorrelation in the model. The correlogram values in the second block also support this proposition since the P values of all the equations are greater than 0.05.

Table 7: Diagnostic Test for Short Term Model Appropriateness

Breusch-Godfrey Serial Correlation LM Test			
F-statistic	0.608883	Prob. F(2,21)	0.5533
Obs*R-squared	2.466473	Prob. Chi-Square(2)	0.2913

Model Stability

The study has examined the stability of the model with the help of the CUSUM test. Since the blue and red lines do not intersect in Figure 2, we concluded that the model is stable for two lags and predicts a short-term relationship between independent and dependent variables.

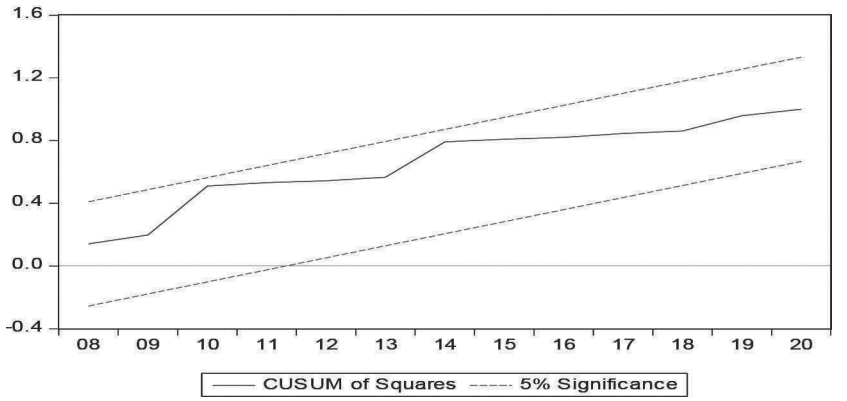

Figure 2: Stability Diagnostic – Recursive Estimates (OLS) CUSUM Test – Short Term

Results from Short Term Model

Table 8 shows the short-term movements of the variables. Based on the Wald-test, we concluded that the GDP has a short-term relationship with the fiscal deficit because the p-value of F-stats is less than 0.05, suggesting both variables move together. But in the short-run, the rest of the variables were constant and showed no short-run relationship with fiscal imbalance.

Table 8: Results for Short Term Model

X1				
Test Statistic	**Value**	**df**	**Probability**	
F-statistic	3.0011	(4, 23)	0.0395	
Chi-square	12.0044	4	0.0173	ST Relationship
X2				
Test Statistic	**Value**	**df**	**Probability**	
F-statistic	0.853846	(4, 23)	0.506	
Chi-square	3.415382	4	0.4909	No Relationship
X3				
Test Statistic	**Value**	**df**	**Probability**	
F-statistic	0.880915	(4, 23)	0.4907	
Chi-square	3.523658	4	0.4743	No Relationship
X4				
Test Statistic	**Value**	**df**	**Probability**	
F-statistic	1.944421	(4, 23)	0.1371	
Chi-square	7.777684	4	0.1001	No Relationship

Discussion and Conclusion

Discussion

The government of most countries focuses on achieving economic equilibrium. Therefore, the government has two options: either control the supply side (labor policy and investment policy) or demand side (monetary policy and fiscal policy) or equalize investment and saving within the country (Jalil, Tariq, & Bibi, 2014; Laopodis, 2009). Given the importance of economic equilibrium, this study has focused on the demand side. The study has identified the essential determinants that affect the fiscal imbalance. Our study aligns with the Keynesian school of thought, which also focuses on the short-term effect on the economy.

In this research, we have taken Fiscal Imbalance (Y) as a dependent variable and GDP per capita (constant 2010 US$) – (X1), Total debt service (% of GNI) – (X2), trade (% of GDP) – (X3), Broad money (% of GDP) – (X4), GDP deflator (base year varies by country) - (X5), Current account balance (% of GDP) – (X6), Foreign direct investment, net inflows (% of GDP) – (X7), GE % GDP - (X8), and GI % GDP (X9) as independent variables. In the first step of the research, we have tested data stationery. We found that the GDP deflator (base year varies by country) - (X5) is not stationary by all means, due to which we removed it from the ARDL equation.

In the second step, we further dropped two variables, GE % GDP - (X8) and GI % GDP (X9), which in our opinion, were against the logic. Subsequently, we dropped two more variables (1) Current account balance (% of GDP) – (X6), and (11) Foreign direct investment and net inflows (% of GDP) – (X7). These variables were insignificant, and dropping them did not affect the model, suggesting their non-applicability in the system.

Conclusion

We used the Autoregressive Distributed Lag Model (ARDL) in this research. The idea was to evaluate the short and long run relationship of the model. We have developed three models based on: (i) 6 lags, (ii) 4 lags, and (iii) 2 lags. The study has based all these models based on t (i) GDP per capita (constant 2010 US$) – (X1), (ii) Total debt service (% of GNI) – (X2), (iii) trade (% of GDP) – (X3), and (iv) Broad Money (% of GDP) – (X4). Model selection criteria suggests using two lag models to evaluate the long-run relationship. Thus, we have used the Wald test to examine the long-run relationship. The Wald test results suggest that all independent variables used in the study have a significant co-movement effect on the fiscal imbalance in the long run. The study also found the short-run relationship of GDP per capita with the fiscal imbalance, which aligns with the Keynesian school of thought, which believes that GDP per capita significantly affects fiscal imbalance in the short run. Therefore, it is concluded that the extracted variables have a significant long-run relationship with the fiscal imbalance of Pakistan.

Implications

High growth is essential for a country's sustainable development. The study will help the government overcome the fiscal imbalance, reduce inflation, increase GDP, and generate employment. The policymakers can also benefit from this study as they learn about the variables necessary to control unsustainable fiscal measures. The study will provide measures to policymakers to reduce unnecessary expenses and enhance revenue. Such measures significantly reduce the fiscal imbalance. Academicians, teachers, and students can also benefit from this study as it provides input and guidance for future research. This study is also beneficial to society. The increased per capita income and employment rate would bring prosperity to society.

Limitations and Future Research

This study has several limitations. The findings cannot be generalized since they are related to Pakistan. The study has focused on five variables that affect the fiscal imbalance, allowing researchers to incorporate more variables in their studies. In the developed model, we have dropped four variables. This calls for further investigation of

the association of these variables with the fiscal imbalance. We have collected data for 20 years, from 1970 to 2019. A data set of a larger period may bring further insight into the issue. A comparative study of two or more countries can enhance the developed model's generalizability, which future researchers can undertake.

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Market Forces
College of Management Sciences

Volume 17, Issue 1, June 2022
https://doi.org/10.51153/mf.v7i1.537

Effect of Uncertainty, Supplier Involvement, Supplier Performance, and Partnership Quality on Buyer-Supplier Relationship

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Abstract

In this explanatory research, a model is developed to validate the premise that value-creating supplier relationships between firms and suppliers will affect the supply chain of manufacturing and non-manufacturing companies. The research examined the effect of uncertainty, earlier supplier involvement, supplier performance, and partnership quality on buyer dependence on the supplier. It also examined the moderating role of industry types on buyers' dependency. Of the four moderating relationships, we found support for two hypotheses, and we did not find empirical evidence for the other two. The study found that uncertainty, earlier supplier involvement, supplier performance, and partnership quality significantly affect buyers' dependency.

Keywords: *Supplier involvement, partnership quality, supplier performance, uncertainty, procurement.*

Introduction

Supply chain management involves managing material and information across an organization, utilizing the facilities, i.e., the vendors, manufacturing, product assembly,

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and distribution channels (Koberg & Longoni, 2019). It is considered a backbone for creating infrastructure within societies and businesses. Expanding global markets, technology, and the rapid exchange of information, ideas, goods, and services have become a big global supply chain network (Wieland, 2021). It starts from the idea of the product till the after-sale service. In previous decades, there was no concept of the supply chain, but over time, it has become an essential part of businesses to compete locally and internationally (Saberi, Kouhizadeh, Sarkis & Shen, 2019). Marketers and practitioners believe it gives a competitive edge to a firm. For business operational efficiency, supply chain management has become a critical element. All business activity issues come under the domain of the supply chain. It deals with the issue related to finance, allocation and movement of funds, global sourcing, customer satisfaction, or the need to maintain a consistent supply of goods and services (Ketchen Jr, & Craighead, 2020).

Researchers have viewed supply chain management from different perspectives. Some researchers define it from a purely operational perspective, which is responsible for the flow of material, items, information, and products. While others view it in philosophical terms, some relate it to the management process (Richey, Roath, Adams & Wieland, 2022). The supply chain is not just a chain of dealing with a business relationship on a one-to-one basis; it also manages multiple relations concurrently (Shaw, 2019). Firms have to deal with related and non-related vendors, suppliers, and distributors for a consistent and efficient supply chain. Globalization has made it convenient for businesses to acquire materials and services from different global suppliers (Irfan, Wang & Akhtar, 2019). A reputable supplier can enhance a firm's image. Therefore, the proposed research mainly focuses on the supply side of SCM. It focusses on buyers and their dependence on suppliers. Firms in the current era have developed new business processes to deal with the local and international market. It includes the procurement of materials, supplier development, sourcing, negotiation and to some extent, inventory management (Sulaeman & Harsono, 2021). Firms improve their efficiency by building sustainable relationships with their distributors and suppliers (Siawsh, Peszynski, Young & Vo-Tran, 2021). This bonding between suppliers and buyers is beneficial to both. For an effective supply chain, the firm needs efficient and supportive operational staff, working on demand forecasting, developing timely demand requirements, and introducing development programs (Shaw, Grant & Mangan, 2021).

The relationship between buyers and suppliers is contingent on timely supply of goods and services. Consistency in ordering procedures promotes trust between buyers and sellers. Based on the specific requirement of the industry, both suppliers and buyers can develop new ways of collaboration that can increase the efficiency of the supply

chain (Herden, 2020). Buyers and suppliers have the same power to bargain if they are of similar size, and multiple buyers and sellers exist in the supply chain market. In supply chain relationships, the suppliers would have more power to bargain and dictate terms if they are a supplier of specific goods which others cannot deliver (Shaw, Grant & Mangan, 2021). Similarly, large retail giants like Walmart have more bargaining power because of the quantity of goods and services that they order. Buyers and sellers collaborate in strategic partnerships by investing technical and monetary resources (Tan, Yan, Chen & Liu, 2018; Fatorachian & Kazemi, 2021). Many firms like Honda and the pharmaceutical industry make huge investments in their vendors. They also transfer technology to the vendors, which improves the quality of supply and improves the efficiency of the supply chain.

Given the above discussions, the study aims to:

1. Identify the effect of uncertainty, supplier involvement, supplier performance, and partnership quality on buyer dependence.
2. The moderating roles of firm category on (i) uncertainty and buyer dependence, (ii) earlier supplier involvement and buyer dependence, (iii) supplier performance and buyers dependence, and (iv) partnership and buyer dependence.

Conceptual Framework

We have developed a model containing four direct relationships and four mediating hypotheses to meet the above objectives, presented in Figure 1.

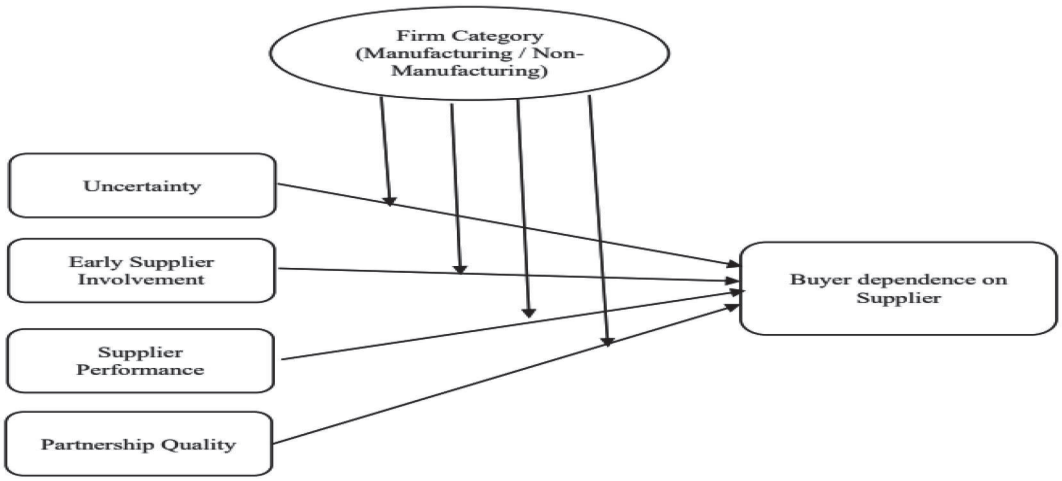

Figure 1: The Research Model

Hypothesis Development

Uncertainty and Buyer Dependence

Rasi et al. (2019) tested an uncertainty model in the buyer-supplier market. The author used communication, strategic sourcing, and market and supply chain orientation as mediators in the model. Based on the data collected from 515 professionals employed in the supply chain, the study concluded that uncertainty negatively affects buyer dependence, and the four mediators used in the study indirectly affect buyer dependence. Another study based on a sample of 2399 collected from several industries, including electronic, metal, textile, and steel, concluded that the vertical control of the manufacturers positively affects supplier performance (Ryu, Min & Zushi, 2007). It also reduces the uncertainty aspect of the suppliers. Previous researchers also suggest a significant impact of uncertainty on buyer dependence. Murray-Prior and Wright (2001) found that "when asset value is high, uncertainty in the relationship also gets high." Researchers concluded that uncertainty stimulates supplier dependency (Zhou, Chong, Zhen & Bao, 2018). Chu, Wang, Lai and Collins (2019) assert that low operational excellence in an uncertain environment promotes high vulnerability—however, supplier relationships and Integration help improve operational excellence in an uncertain environment (Lee, 2015). Kamble and Gunasekaran (2020) also assert various external factors can increase organizations' dependency on suppliers.

H1: Uncertainty has a significant impact on buyer dependence.

Early Supplier Involvement and Buyer Dependence

Tseng and Liao (2015) examined the supply chain's integration, innovation, and orientation. The study gathered data from 124 transportation firms in Taiwan. The study found that integration in the supply chain positively affects IT application and market orientation. Research also documents that the market-oriented and IT-based firms share information and data efficiently, which increases supply chain effectiveness and organizational performance (Darby, Ketchen Jr, Williams & Tokar, 2020). Qrunfleh and Tarafdar (2013) studied various strategies in the supply chain based on the data collected from the 205 managers of US organizations. The study found that strategic partnership mediates lean supply chain responsiveness and supply chain strategy. Firms that involve themselves with the supplier early are more successful. At the same time, postponement partially mediates supply chain strategy and responsiveness (Cheng, 2020).

Kannan and Tan (2006) investigated the firm performance concerning vendor selection and their engagements with the buyer's firms. Based on data set of 527

collected from suppliers, the study concluded that firms that judiciously select suppliers are more successful than others. Caniëls, Vos, Schiele and Pulles (2018) assert that a firm's success also depends on the relationship with the suppliers. Extant literature documents a significant association between early supplier involvement and buyer dependence (Giri & Masanta, 2020). Firms that involve suppliers in product design and development stages have more efficient supply chain mechanisms, leading to a sustainable relationship between firms and suppliers (Cheng, 2020). Many firms increase the efficiency of the supply chain by allowing suppliers to become their stakeholders. Such arrangements are beneficial for suppliers and firms.

H2: Early supplier involvement has a significant impact on buyer dependence.

Supplier Performance and Buyer Dependence

Supplier performance has a direct and indirect association with information and logistics integration. O'Connor et al. (2020) found that the association between cooperation between suppliers and firms significantly affects supplier performance. Prajogo and Olhager (2012), in a study on Australian manufacturing firms, concluded that information sharing and information technology capabilities both have a direct impact on logistics integration. A study examined the association between development and performance and supplier strategic purchasing in Spain. The study found a significant association between strategic purchasing and the performance of the suppliers and their development (Lindgreen et al., 2009; Bhardwaj & Ketokivi, 2021).

Tan et al. (1999) suggest that supplier performance significantly impacts buyer dependence. Companies always rely on their key performing suppliers to a certain extent. Due to their interaction and extensive communication and knowledge exchange, the organization depends on that supplier (Chu, Wang, Lai & Collins, 2019). Similarly, Terpend and Krause (2015) also suggested that competition plays an important role in buyer-supplier relationship building. Due to this relationship, supplier performance increases gradually, and it helps to sustain the relationship. In this manner, the tendency to depend upon each other increases, and supplier performance leads to buyer dependency on its suppliers (Trent, 2008; Najafi-Tavani et al., 2020)

H3: Supplier performance has a significant impact on buyer dependence.

Partnership Quality and Buyer Dependence

Seo, Dinwoodie and Kwak (2014) examined the significance of innovation in supply chain performance through integration. The study focused on South Korean manufacturers. The variable used in the research included SC integration, innovation,

and SC performance. The results suggest that innovativeness positively impacts SC integration and performance. Research also suggests that integration does not mediate SC performance. But internal and supplier integration mediates innovativeness and SC performance relationship (Radhakrishnan et al., 2018). Zhao et al. (2013) studied the impact of risk integration on firm performance within supply chains. The study's variables include supply chain risk, company performance, SC integration, supply, and demand. The study collected data from 317 individuals representing three different industries having manufacturing plants in 10 countries. Past studies found that SC integration is negatively related to SC risks, especially supply delivery risks. Further, they found a contingent relationship between performance and SC integration (Aprianingsih et al., 2018; Singhet et. al., 2019).

Theodorakioglou, Gotzamani, and Tsiolvas (2010) studied vendor and buyer quality management. The study found a significant positive relationship between vendor management and practices adopted in quality management. Researchers believe organizations adopt and implement quality management practices to simplify supply chain management implementation (Teo, Dang-Pham, Nkhoma & Nguyen, 2018). Ryu, So and Koo (2009) explored the partnership and a firm's performance within the supply chain. The study collected data from 141 buyer-supplier practitioners in South Korea and tested it through structural equation modeling. The results show that operational and strategic variables affect the buyer-supplier partnership and eventually influence the firm's performance. Sánchez-Rodríguez et al. (2005) investigate the significance of supplier development on buying firms' performance through structural equation modeling. The study collected data from 306 manufacturing companies in Spain. The study found that supplier development significantly influences firm performance which is important for sustainable growth.

H4: Partnership quality has a significant impact on buyer dependence.

Moderating Relationships

The above sections provided the theoretical support for the association of uncertainty, supplier involvement, supplier performance, and partnership quality on buyer dependence. The literature suggests the discussed relationships may vary from manufacturing to non-manufacturing concerns. Therefore, we argue that firm category would moderate all the discussed relationships.

H5: Firm category moderates the association between uncertainty and buyer dependence on suppliers.

H6: Firm category moderates the association between early supplier involvement buyer dependence on suppliers.

H7: Firm category moderates the association between supplier performance and buyer dependence on suppliers.

H8: Firm category moderates the association between partnership quality and buyer dependence on suppliers.

Research Methodology

Population and Sample

The target population for this study includes the procurement personnel working in the manufacturing and non-manufacturing sector across the city of Karachi, Pakistan. The study used a purposeful sampling technique as we wanted to target the experts in the field. We have collected a sample of 228 from the suppliers of Karachi. We used a close-ended questionnaire for collecting the data.

Scales and Measures

The study has adopted the questionnaire from earlier studies. It has five latent variables and 21 indicator variables. All the indicator variables were based on the 5 point Likert Scale. "1 indicates highly disagree and 5 represents highly agree." Table 1 shows the summary of the constructs used in the study.

Table 1: Constructs used in the study

Construct	Sources	Items	Reliability in earlier studies
Early Supplier Involvement	Trent (2008)	3	0.748 to 0.832
Supplier Performance	Mora-Monge et al. (2010)	4	0.721 to 0.762
Partnership Quality	Mora-Monge et al. (2010)	6	0.764 to 0.813
Uncertainty	Gao, Sirgy, and Bird (2005)	4	0.772 to 0.864
Buyer Dependence	Hallikas et al. (2005)	4	0.844 to 0.872

Statistical Analysis

The study has used Smart PLS for data analysis. While generating the measurement model, several statistics related to reliability, convergent validity, and discriminant validity were calculated. While generating a structural model, it concurrently gives results of all the direct and indirect hypotheses, effect sizes and significance levels.

Demographic Characteristics of Respondents

The study has collected data from 228 respondents. The respondent profile in terms of the industry type, age, gender and education is presented in Table 2.

Table 2: Respondents' Profile

Description Sample Size = 228		Frequency	Percent
Industry	Construction	38	16.7
	FMCG	31	13.6
	Textile Manufacturing	28	12.3
	Information Technology	24	10.5
	Petroleum	24	10.5
	General Trading	19	8.3
	Printing & Packaging	16	7.0
	Public Sector	16	7.0
	Pharmaceutical	13	5.7
	Financial Services	7	3.1
	Other Manufacturing	6	2.6
	Other Services	6	2.6
	Total	228	100.0
Designation	Executives	82	36.0
	Manager	69	30.3
	Asst. Manager	40	17.5
	Head of Department	37	16.2
	Total	228	100.0
Education	Masters & Above	161	70.6
	Graduate	66	28.9
	Intermediate	1	0.4
	Total	228	100.0
Company Age (in years)	13 or above	155	68.0
	7 to 12 years	47	20.6
	1 to 6 years	26	11.4
	Total	228	100.0
Gender	Male	194	85.1
	Female	34	14.9
	Total	228	100
Category of Firm	Manufacturing	125	54.8
	Non-manufacturing	103	45.2
	Total	228	100

Descriptive Statistics

The study has assessed the internal consistency and univariate normality of the constructs. The results are summarized in Table 3.

Table 3: Descriptive Analysis

	Cronbach's Alpha	Mean	Std. Dev	Skewness	Kurtosis
Buyer Dependence	0.848	3.580	1.789	1.902	1.440
Early Supplier Involvement	0.857	4.350	1.985	1.257	-1.749
Firm Category	0.843	3.350	1.444	1.303	-0.964
Partnership Quality	0.894	3.670	1.063	-1.215	1.678
Supplier Performance	0.864	3.930	0.530	-1.968	2.645
Uncertainity	0.899	3.710	1.607	2.552	1.535

The results suggest that the internal consistency of the constructs is within the acceptable range as all Cronbach's Alpha values are greater than 0.70. Similarly, the constructs do not deviate from the requirement of univariate normality as both Skewness and Kurtosis values are between ±3.5.

Convergent Validity

We have assessed the theoretical relevance of the indicator variables and latent variables through convergent validity analysis. The results summarized in Table 4 show the values of composite reliability and AVE.

Table 4: Convergent Validity

	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Buyer Dependence	0.859	0.887	0.668
Early Supplier Involvement	0.863	0.898	0.638
Firm Category	0.845	0.895	0.681
Partnership Quality	0.896	0.919	0.654
Supplier Performance	0.878	0.901	0.646
Uncertainty	0.899	0.937	0.833

The results show that composite validity values range from 0.887 to 0.937, and all AVE values are at least 0.60, suggesting that latent variables and their indicator variables are theoretically aligned.

Discriminant Validity

It is necessary to ascertain the uniqueness and distinctiveness of the constructs. This study used Fornell and Larcker (1981) discriminant validity criteria and presented the summarized results in Table 5.

Table 5: Discriminant Validity

	BD	ES	FC	PQ	SP	UC
Buyer Dependence	0.753					
Early Supplier Involvement	0.656	0.799				
Firm Category	0.403	0.332	0.825			
Partnership Quality	0.763	0.609	0.384	0.808		
Supplier Performance	0.717	0.725	0.388	0.628	0.804	
Uncertainity	0.377	0.716	0.283	0.375	0.596	0.912

The results suggest that all the constructs are unique and distinct since all Pearson correlation values are less than AVE.

Variance Explained By Exogenous Variables

The R squared values explain the change in the endogenous variables due to the change in exogenous variables. Their values should be greater than 0.10, suggesting movement in the exogenous variables significantly explains the change in the endogenous variable. The summarized results are presented in Table 6.

Table 6: R-Squared & Adjusted R-squared

Constructs	R Squared	Adjusted R Squared
Buyer Dependence	0.697	0.694
Early Supplier Involvement	0.110	0.109
Partnership Quality	0.147	0.146
Supplier Performance	0.151	0.150
Uncertainity	0.080	0.079

Predictive Relevance of the Model

The study has examined the predictive relevance of the model based on the Q square values. The summary of results presented in Table 7 shows that Q squared values are greater than zero, suggesting adequate model predictive power.

Table 7: Predictive Relevance of the Model

	SSO	SSE	Q^2 (=1-SSE/SSO)
Buyer Dependence	7188	4426.91	0.384
Early Supplier Involvement	5990	5574.076	0.069
Firm Category	4792	4792	
Partnership Quality	7188	6508.634	0.095
Supplier Performance	5990	5418.459	0.095
Uncertainty	3594	3356.963	0.066

Fit Indices of the Model

The study has presented the summary of fit indices in Table 8. The results suggest that the SRMR value <.08 and NFI >0.80. Other fit measures are within the prescribed range suggesting the model fits adequately.

Table 8: Fit Measures

	Saturated Model	Estimated Model
SRMR	0.077	0.079
d_ULS	2.612	22.979
d_G	1.833	2.67
Chi-Square	8322.456	10497.18
NFI	0.892	0.896

SEM Results

The study based on bootstrapping generated the results summarized in Table 9. Also, refer to the measurement model in Figure 2 and the structural model in Figure 3.

Table 9: SEM Results

	Beta	T Stat.	P Values	Results
Uncertainty -> Buyer Dependence (H1)	-0.11	4.310	0.000	Accepted
Early Supplier Involve. -> Buyer Dependence (H2)	0.156	3.872	0.000	Accepted
Supplier Performance -> Buyer Dependence (H3)	0.337	9.725	0.000	Accepted
Partnership Quality -> Buyer Dependence (H4)	0.471	18.707	0.000	Accepted
Moderating Effect 1 -> Buyer Dependence (H5)	0.101	4.247	0.000	Accepted
Moderating Effect 2 -> Buyer Dependence (H6)	-0.004	0.093	0.926	Rejected
Moderating Effect 3 -> Buyer Dependence (H7)	-0.069	1.995	0.047	Accepted
Moderating Effect 4 -> Buyer Dependence (H8)	0.017	0.980	0.328	Rejected

The study has empirically tested four direct hypotheses and four moderating hypotheses. Our results support all the four direct hypotheses and reject two moderating hypotheses.

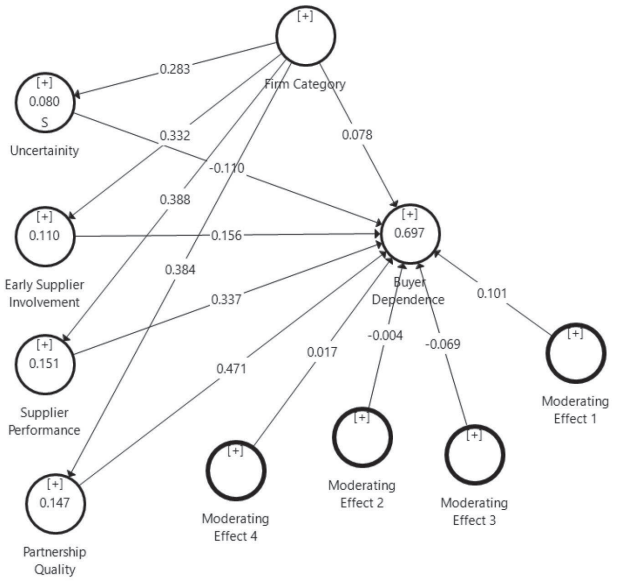

Figure 2: Measurement Model

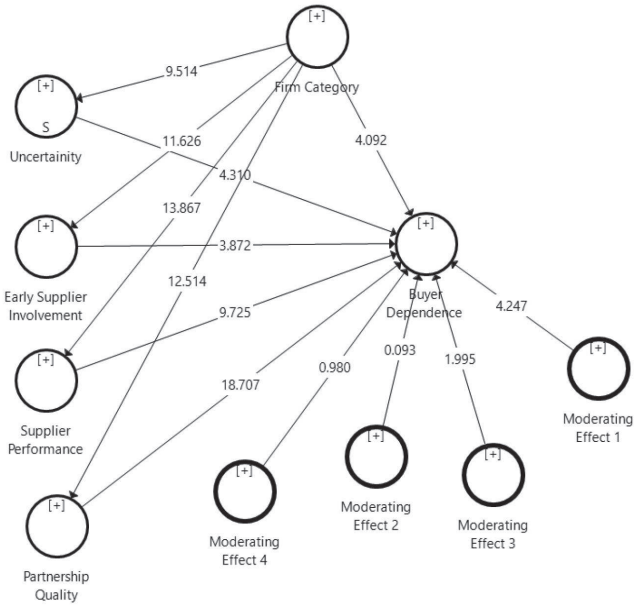

Figure 3: Structural Model

Discussion and Conclusion

Lee's (2015) findings are consistent with this study's result. This study suggests that the uncertainty aspect negatively affects buyers' dependence on suppliers. Supplier

uncertainty reduces firms' operations and performance. Therefore, while developing relationships with the suppliers, it is necessary to ensure how consistent and trustworthy they are. Many firms also incorporate a clause that penalizes suppliers if they fail to deliver goods and services in time. The study has shown that supplier involvement significantly affects buyer dependence on the supplier. This finding is consistent with a study on SMEs (Bothof & van-Weele, 2015). Zahari's (2017) study in Malaysia has also validated the association. Supplier integration is associated with the level of buyer dependency. If the dependency is high, the chances of integration are low, and vice versa (Oh et. al., 2016). Supplier performance has a significant effect on the buyer's performance. Avery et al. (2014) also validated this association and suggested that the firms must provide technical and other support to their vendors and suppliers.

The study found that partnership quality is a significant predictor of dependency on suppliers. The finding is in line with Kull and Ellis (2016), who also found that the quality of partnership with the supplier can effectively manage and control buyer dependency on suppliers. It undermines an organization's core competencies and increases reliance on suppliers. Buyers who are dependent on suppliers may not perform optimally. Thus, it is necessary to have an adequate balance in the buyer and supplier relationship (Avery et al., 2014).

Conclusion

The study has focused on examining the effect of uncertainty, supplier involvement, supplier performance, and partnership quality on buyer dependence. It has also used firm types, i.e., manufacturing and non-manufacturing, as a moderator. Of the four moderating relationships, we found support for two hypotheses, and we did not find empirical evidence for the other two. The study found that uncertainty, earlier supplier involvement, supplier performance, and partnership quality significantly affect buyers' dependence.

Limitations and Future Research

The study has focused on selected manufacturing and non-manufacturing concerns of Karachi. This finding cannot be generalized unless researchers collect the samples from the major cities of Pakistan. This study has examined the moderating effect of firm category on suppliers' dependence. We suggest a comparative study between the service sector and the non-service sector which will bring more insight to the issue. Similarly, comparative studies between different cities in Pakistan may also help understand the issues related to the supply chain. Perception of age, experience, and gender may vary, which we did not consider. Future studies can use the demographic factors as control variables.

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Market Forces
College of Management Sciences

Volume 17, Issue 1, June 2022
https://doi.org/10.51153/mf.v7i1.535

Time-varying Stock Market Integration and Diversification Opportunities within Developed Markets Using Aggregated Data Approach

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Abstract

This study has examined time-varying features of the developed stock market and diversification opportunities. The study has collected data from 21 developed countries ranging from 2000-2018 from the Pacific Region, Northern Europe, Western Europe, Southern Europe, and G7. The study has developed five panels, and each panel has included one home country and the remaining countries of that panel. We applied panel cointegration and VECM to test the stock market integration and diversification opportunities in the short and long run. Our results indicate few short and long-run diversification opportunities for international investors in the post-crisis period that are more relevant. Canada, Japan, and Italy have long-run opportunities for diversification in the G7, and only Japan has short-run opportunities for diversification. Hong Kong and Japan have short-and long-run opportunities for diversification in the Pacific region.

At the same time, we found short-run diversification options for the UK and Norway in

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Northern Europe. In the Western European Region, Australia and Switzerland have long-term diversification. There were no long and short-run diversification opportunities in the Southern European Region in the post-crisis period.

Keywords: *Sock market integration, diversification opportunities, developed markets, VECM.*

Introduction

Stock market integration has a time-varying effect in the stock markets of developed countries, which has significantly increased in recent years (Pukthuanthong & Roll, 2009). Given its importance, many researchers have examined this association using different methodologies. For example, Grubel (1968), based on empirical evidence, has validated that international portfolio diversification can minimize portfolio risk through stock markets that have fewer linkages with each other.

Financial integration refers to the financial markets that are closely linked. It includes regional global, neighboring, and global markets (Aboagye & Anong, 2020). Fauziah (2018) asserts that financial integration promotes efficient capital allocation and higher investment and risk-sharing opportunities. It allows greater investment and growth opportunities for the domestic market. The integration motivates domestic firms to become more efficient as they have to compete directly with foreign financial markets. At the same time, financial integration promotes the flow of capital from developed economies to developing economies, stimulating economic growth. Consequently, the capital inflow reduces the capital cost and increases investment opportunities. Financial integration enables poor economies to shift their investment from conventional (agricultural and natural), allowing them to reduce macroeconomic volatility.

Financial integration also has adverse effects. It promotes financial contagion in neighboring and regional economies. It also allows capital outflow from poor capital countries to capital-rich countries. Consequently, it adversely affects countries with poor poor institutions and policies. Investors' diversification significantly depends on a high level of integration. Investment diversification from one country to another becomes easier when a high level of integration exists between two countries. Yang et al. (2006) assert that globalization, technological advancement, and relaxation in cross-border barriers have made international investment more attractive (Lehkonen, 2015).

Globalization and technology diffusions have linked the stock market, due to which individuals and financial institutions' interest in investing in other countries has increased significantly. Dias, Heliodoro, Teixeira, and Godinho (2020) assert that financial

integration research links the stock markets, provides significant benefits for global diversification and promotes economic stability. The global crisis promotes stock market integration and enhances global investors' challenges. Various studies on stock market integration using developed countries' data found that stock market integration has reached an optimal level, and the integration level is increasing (Shahzad et al., 2016). Yang, Kolari, and Min (2003) and Yang et al. (2006) believe financial crisis stimulates a time-varying degree of stock market integration.

Many past studies have documented that crises do not promote contagion (Al-Dahana, Hasanb & Jedah, 2019), but many researchers, including Rizavi, Naqvi, and Rizvi(2011), have contrary evidence. Despite these results, it will be immature to reject the "correlation breakdown hypothesis" unless researchers support it with more empirical evidence (Rodriguez, 2007; Bekaert et al., 2009). Our study examines the changing pattern of integration over time and the impact of the global financial crisis on developed countries' integration levels. For that reason, we studied the stock market integration within developed countries at three different times: pre, during, and after global crises. This study examines stock market integration using country-level/ aggregated data. It mainly focuses on the international investors who want to invest within developed countries in the short and long run. The results of this study may help international investors find a new combination of international portfolio diversification within developed countries.

The study contributions to the body of knowledge are as follows. First, Only a few studies have examined multiple developed markets in one study. Given this gap, we have contributed to the body of knowledge by using the data set of 21 developed countries belonging to four developed regions and one country group. Secondly, we have used a subsampling approach to test the time-varying feature of integration and the impact of the global financial crisis on developed markets. Third, we have used panel data cointegration and "Vector Error Correction Model (VECM)." This model helps test the integration level between "short and long funds between the country-level assets."

Literature Review

The motivation for keeping a portfolio varies among developed and underdeveloped countries' investors. For example, investors belonging to developed countries tend to keep a diversified portfolio of uncorrelated stocks (Zaimovic, Omanovic & Arnaut-Berilo, 2021). Goetzmann and Komar (2005) assert that the stock market comovement historically varies, and the diversification benefits are not constant over time. On the other side, the emerging market is less integrated than the developed markets, with little potential for diversification (Chambet & Gibson, 2008). Christoffersen et al. (2014)

also concluded that comovement for developed countries has a significant upward trend. We reviewed various studies of developed countries' integration, and their major findings follow.

Morelli (2009) studied on stock market integration of G7 countries, and he found high integration in all seven countries because of increasing trade and economic relationships between these countries. Horvath and Petrovski (2013) examine the stock market comovement between Western Europe and central Europe. Their finding indicates that stock market integration is much higher in Central Europe to Western Europe. Lehkonen (2015) has documented that emerging market integration increased slightly while developed market integration decreased during the crisis.

The literature suggests that the level of integration varies from South Asian Stock market to developed stock market. It is high in the developed markets and low in South Asian Stock Markets (Bowman & Comer, 2000). Thus, we argue that investors in the developed stock market have more opportunities for portfolio diversification. Parma and Wassvik (2018) believe that the interdependence of the stock markets stimulates mutual shock in regional stock markets. Latent literature also suggests that the stock markets globally are now highly integrated. There is a high interrelation between the stock markets of the UK and Asian countries. At the same time, the USA market significantly affects the European and South Asian markets (Shahzad et al., 2016; Bessler & Yang, 2003). The global crisis of 2008-2009 has the enhanced conditional correlation between the stock returns of different regions and countries (i.e., Eastern and Central European emerging markets and developed markets i.e., USA and UK (Syllignakis & Kouretas, 2011; Kim, Moshirian & Wu, 2005).

Claus and Lucey (2012), in a study on stock market integration in the pacific region, found the presence of a relatively higher degree of stock market integration of "Japan, Hong Kong, and New Zealand stock markets." They also found that the New Zealand stock market seems to be more integrated with Japan than Australia. Hence, they concluded that financial market liberalization is necessary but not a condition for the stock market integration.Many researchers have focused on the integration, contagion effect, and diversification during the global financial crisis. Using the Gewke measure of feedback, many researchers found that the foreign investment between Germany and European countries in recent years has increased as the stock markets of European countries are highly linked. Bekaert, et al (2014) and Bekaert and Harvey(1995) found a rising trend between European countries' comovement. The enhancement in stock market comovement can be considered an increase in integration and contagion. Bekaert and Harvey (2003) studied three types of contagion effect, global, the US,

and domestic, and found they have different magnitude.Previous literature suggests magnitudes of stock market integration in developed countries have increased. Further, Dungey and Gajurel (2014) also identified the contagion effect in the US and developed countries. This study tested stock market integration status in developed markets and time-varying stock market integration features during pre, during, and post-crisis.

Data

The study has tested the level of stock market integration based on the data set of 21 developed countries. We included four developed country regions and one group of the country. Pacific Region countries we selected are "Australia, Hong Kong, New Zealand, Singapore, and Japan." From Northern Europe, we selected "UK, Norway, Ireland, Finland, and Denmark," From Western Europe, we targeted "Switzerland, Netherlands. Germany, France, Austria, From Southern Europe, we focused on "Sweden, Spain, Portugal, and Italy," And the G7 Countries we focused on "Canada, France, Germany, Italy, Japan, UK, USA." The study extracted eight years of data (i.e., from 2000 to 2018) from Thompson Stock Indices. We segment the collected data into three eras. The first was the pre-crisis era (from January 2000 to December 2007). The second was the crisis era, and it ranged from "January 2008- to December 2009." And the third was the post-crisis era ranging from "January 2010 to December." Based on price stock indices, we have determined stock market returns.

The study initially used "time series analysis for all these countries" and then transformed the countries into several panels. We applied panel cointegration techniques to test integration in each region (Pedronis, 2019; Cheng, Jahan-Parvar, & Rothman, 2010). We also tested stock market integration using panel cointegration tests (Banerjee & Carrion-i-Silvestre, 2017). We developed a model by including the "panel of the only home country as dependent denoted by (pit) and the panel of other countries as independent (pjt)." We constructed similar panels to test all regions' stock market integration. Finally, we examined short-term and long-term associations between country-level data using VECM.

Method and Techniques

We, in our model, have four regions and one group of developed countries for testing the level of integration in pre, during, and post-crisis periods. In the data set of all four regions and one group of countries, we applied the same six steps for stock market integration

Trend analysis

The study used graphical analysis to find out the trend in the series. It helps to determine the pattern of the series over time. The trend line helps in determining the

return face shock in different period

Descriptive Analysis

Descriptive statistics cover the various aspects of the data like distribution, deviation, central tendency, and the trend in the data. The study used country-level return data series to examine the descriptive statistics.

Correlation Analysis

The investor can get information regarding the degree of association with each country within the region based on the lowest correlation. We used Country-level return data series to explain the pairwise correlation among developed countries within the region.

Panel Data Stationarity Testing

A stationarity test is necessary to apply the panel cointegration test. If two series are non- Stationarity at level (price data) and Stationarity found on the first level (return data), we can apply panel cointegration, discussed above. We provided unit root testing on excluding country panels.

Panel Cointegration Test

The study initially did an "empirical analysis for a typical investor in any one of the nations." We based the investment portfolio on the "stock market index and market indices," depicted in equation 1

$$P_{it} = \delta_{1i} + \theta_{1i} P_{jt} + u_{it} \qquad \text{Eq 1}$$

Panel VAR/ VECM

We estimated the "short-run relationship between the variables using the panel VECM model." Equation 2 depicts the derived equation.

$$\Delta P_{it} = \delta_{2i} + \theta_{1i} \sum_{k=1}^{n} \Delta P_{jt-k} + \delta_{1i} ECT_{it-1} + \varepsilon_{it} \qquad \text{Eq 2}$$

Symbolic Δ in the above equations represents the "first differenced form.". The study has represented estimated parameters using "Symbols δ and θs. The Error Correction Term (ECT)" is one lag of the residual from equation (1). Short-term linkage suggests the "significance of the lag value of return for one country." At the same time, significantly negative results suggest a "stable long-run relationship between the variables."

Results and Analysis

Results sections contain five parts that provide evidence on stock market integration and diversification opportunities in all four developed countries, regions, and G7 countries.

Developed Pacific Region

The study selected "Australia, Hong Kong, New Zealand, Singapore, and Japan" to test the country's stock market integration. Portfolio (A) P_{it} was constructed by adding only Australia in a portfolio. P_{jt} (A) is a portfolio containing all four countries, excluding Australia. The study used Pit as a dependent variable in all panel models and P_{jt} as an independent variable. In the case of five countries in the region, we tested five models once for all three periods. Subsequently, we tested the model in three periods, "pre, during, and post-crisis periods," for more insight.

Developed Pacific Region Trend Analysis

The countries "New Zealand, Australia, Hong Kong, Japan, and Singapore" show normal movement except for a few periods. Returns declined in all developed pacific regions in 2008 due to the global crisis. In normal time monthly returns remained within the limit of negative five to positive five percent. Australian returns declined in 2008 (-.15) and in 2016 (-.11). Japan's returns declined in 2008-9 (-28). Singapore's returns went down in 2008 by almost 25%. Hong Kong returns went down in 2008 (-.21) and 2011 (-.23). New Zealand's returns declined by 17% in the 2008 crisis. We can analyze the association level within developed counties. Based on these results, investors can manage their portfolios.

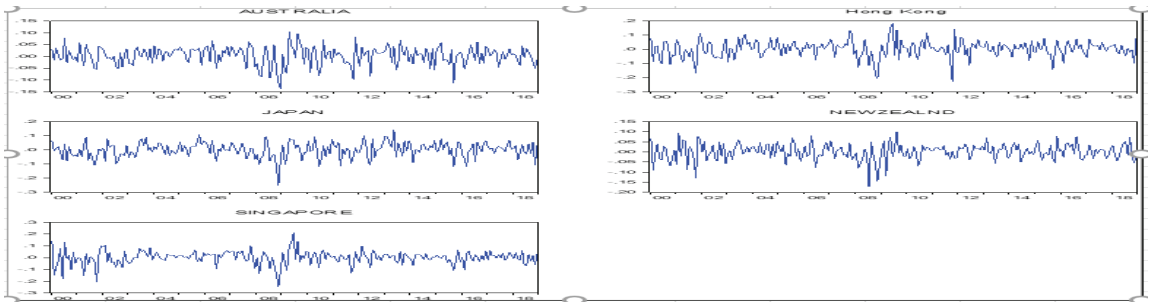

Figure 1: Returns of (Pacific Region)

Developed Pacific Region Descriptive Analysis

We have divided the descriptive analysis into three periods "pre, during, and post-crisis". Australia's average returns are the highest in the panel in the pre-crisis, and Japan

has the lowest average monthly returns. In the case of Singapore, we found the lowest returns (ranging from 0.14 to 0.20 in a single period). The results show that all the countries in the panel are negatively Skewed. Singapore had the highest volatility, and Australia had the lowest volatility. Singapore is leptokurtic, new New Zealand shows normal kurtosis, and the rest are platykurtic.

During the crisis period, all the counties have shown negative average returns. Japan led the lowest negative return delivered by Singapore and the highest negative returns. Single-time highest and lowest returns are shown by Singapore .21 and Japan -.25. Singapore has the highest volatility, and New Zealand has the lowest volatility. All the countries in the panel are negatively skewed except Hong Kong. Japan and Singapore are leptokurtic, and the rest are platykurtic. Japan's highest average monthly returns are in the post-crisis period, and Singapore offers the lowest average monthly returns. At the same time, results suggest Single-time highest and lowest returns demonstrated by Hong Kong .14 and -.22. Japan leads the highest volatility, and New Zealand shows the lowest volatility. All the countries in the panel are skewed negatively except New Zealand. New Zealand is leptokurtic, and the rest are platykurtic. In the pre-crisis period, the average returns of countries are highest .38. In the post-crisis period, it is .33. Returns declined, and the average panel rates were -1.5. These numbers can be helpful for global investors.

Table 1: Descriptive Properties of Developed Pacific Region

Pre-Crisis Pacific	**Australia**	**Hong_Kong**	**Japan**	**New Zealand**	**Singapore**
Mean	0.0082	0.0050	0.0003	0.0024	0.0035
Maximum	0.0777	0.1345	0.1073	0.0934	0.1410
Minimum	-0.0546	-0.1673	-0.1085	-0.1292	-0.2058
Std. Dev.	0.0310	0.0563	0.0457	0.0417	0.0607
Skewness	-0.2947	-0.3239	-0.0969	-0.3257	-0.8070
Kurtosis	2.3240	2.9447	2.6001	3.0761	4.6947
During Crisis					
Mean	-0.0126	-0.0137	-0.0250	-0.0180	-0.0100
Maximum	0.1044	0.1824	0.0965	0.0998	0.2125
Minimum	-0.1381	-0.2074	-0.2505	-0.1706	-0.2486
Std. Dev.	0.0665	0.0969	0.0784	0.0661	0.1010
Skewness	-0.0590	0.1067	-0.7014	-0.5564	-0.0721
Kurtosis	2.0094	2.7714	4.0137	3.0119	3.2350
Post Crisis					
Mean	0.0016	0.0043	0.0059	0.0041	0.0007
Maximum	0.0824	0.1427	0.1441	0.0791	0.1003

Minimum	-0.1136	-0.2283	-0.1200	-0.0690	-0.1298
Std. Dev.	0.0369	0.0518	0.0523	0.0308	0.0417
Skewness	-0.5647	-0.9700	-0.4277	0.0550	-0.6397
Kurtosis	3.3494	6.4524	3.2181	2.7419	3.4994

We provide only 1 region's return graph, descriptive correlation, unit root testing, panel co-integration tables, for rest of four region's return graphs, descriptive correlation, unit root testing, panel co-integration tables are skipped from draft and only interpretation is provided in each section.

Developed Pacific Region Correlation Analysis

The correlation between Australia and Hong Kong is Moderate in pre & during the crisis period and increased during the post-crisis. The correlation between Australia and Japan is moderate in the pre-crisis period, increasing during the crisis and decreasing in the post-crisis period. The correlation between Australia and New Zealand showed the same pattern as Australia and Japan. The correlation between Hong Kong and Japan is moderate in pre-crisis, enhanced during the crisis, and declined post-crisis. The study found a similar pattern between "Hong Kong and New Zealand." In "Japan and New Zealand," the results suggest moderate relation in pre-crisis and increased crisis period but lowest or week in the Post-crisis period.

Table 2: Correlation Pacific Region

Pre Pacific	**Australia**	**Hong Kong**	**Japan**	**New Zealand**
Australia	1.0000	0.4910	0.5500	0.4739
Hong Kong		1.0000	0.4072	0.3893
Japan			1.0000	0.3640
New Zealand				1.0000
Singapore				
During				
Australia	1.0000	0.6660	0.7220	0.6824
Hong Kong		1.0000	0.7920	0.7004
Japan			1.0000	0.6014
New Zealand				1.0000
Singapore				
Post				
Australia	1.0000	0.6607	0.4555	0.4699
Hong Kong		1.0000	0.4209	0.3235
Japan			1.0000	0.2293
New Zealand				1.0000

Singapore

Developed Pacific Region Stationarity

We tested the Panel Stationarity test, ADF unit teston level (prices of stock indices), and at the first difference (returns). Further, Stationarity tests are important as they are pre-requirements of basic models (Im, et al., 2003; Levin, et al., 2002)

Table 3: Developed Pacific Region Panel Unit Root Test Results

	ADF Statistics Levels	ADF Statistics 1st Difference	IPS Statistics Levels	IPS Statistics 1st Difference	LLC Statistics Levels	LLC Statistics 1st Difference
Australia	11.299	179.234	-1.148	-11.847	-0.143	-2.495
Hong Kong	11.224	241.201	-1.108	-16.239	-0.338	-11.235
Japan	7.851	190.131	-0.356	-12.367	0.004	-2.578
New Zealand	9.466	172.296	-0.617	-11.520	-0.267	-2.304
Singapore	7.810	184.642	-0.351	-121033.000	0.104	-2.136

Developed Pacific Region Panel Co-integration

The cointegration test shows cointegration equations among only the home country and portfolio of excluding the home country portfolio Results indicate the "presence of more than one long-run co-integrating relationship among the variables." (Kao 1999)

Table 4: Co-integration Test Results (Developed Pacific Region)

Precrisis	Kao Panel Co-integration	Pedroni Panel Co-integration Statistics				Johansen Panel Co-integration Trace statistics				
	ADF t-Stat.	Panel v	Panel rho	Panel PP	Panel ADF	Group rho	Group PP	Group ADF	None	1
Australia	3.01	-1.16	-0.24	-1.11	-0.11	0.43	-1.36	0.02	13.03	11.98
Hong Kong	1.78	2.38	0.49	1.48	1.13	0.11	1.40	1.10	13.87	11.31
Japan	-0.34	0.60	-0.01	0.00	-0.38	0.83	0.54	0.07	3.65	8.96
New Zealand	0.86	-0.46	0.34	0.31	0.43	1.08	0.89	1.21	11.08	10.98
Singapore	2.57	1.05	-1.15	-1.11	-0.13	-1.34	-1.70	-0.51	16.09	10.65
During Crisis										
Australia	-1.89	1.46	-0.85	-0.69	-0.71	0.15	-0.15	-0.15	15.35	14.42
Hong Kong	-1.46	0.66	0.38	0.53	0.96	0.92	0.64	0.93	17.44	17.89
Japan	-0.60	0.18	1.37	2.15	2.50	2.17	3.37	3.74	6.94	9.09
New Zealand	-2.13	0.27	-0.23	-0.49	-0.48	0.69	0.10	0.21	7.78	18.87
Singapore	-1.08	0.91	0.44	0.70	0.37	0.99	0.98	0.42	11.42	17.51
Post Crisis										

Australia	-0.74	0.20	-1.56	-1.42	-0.82	-2.56	-2.19	-1.41	17.65	10.86
Hong Kong	-1.69	0.72	-1.29	-1.34	-1.30	-1.46	-1.57	-1.62	11.66	97.47
Japan	0.40	-0.17	-0.56	-0.54	-0.03	-1.59	-1.17	-0.54	19.77	7.94
New Zealand	-0.14	-0.63	-0.19	-0.26	-0.09	-0.23	-0.31	-0.08	7.57	8.60
Singapore	-3.16	3.49	-3.35	-2.36	-1.91	-2.07	-2.03	-1.48	9.21	8.34

Developed Pacific Region VECM

Based on the results, we have inferred that apart from Japan, other countries are highly associated with each other in the long run. In post-crisis, other countries have significant long-term linkage apart from Hong Kong and Japan. Also, apart from Japan, a short-term association exists between all other countries. In a crisis, Australia, Japan, and New Zealand were insignificantly associated with the rest of the panel countries, suggesting a short-term relationship. In post-crisis, "we found a short-term association between Hong Kong, Japan, and other panel countries."

Table 5: VECM Results Pacific Region

	Pre-Crisis				During Crisis				Post Crisis			
Regressors	**ECT (-1)**	**Portfolio ret (-1)**	**Portfolio ret (-2)**	**Intercept**	**ECT (-1)**	**Portfolio ret (-1)**	**Portfolio ret (-2)**	**Intercept**	**ECT (-1)**	**Portfolio ret (-1)**	**Portfolio ret (-2)**	**Intercept**
Australia	-1.242523	-0.2977	-0.146428	-0.001094	-0.625714	-0.257934	0.214631	0.002771	-0.993844	-0.286265	-0.200122	-0.000648
	(0.11084)	(0.04088)	(0.03624)	(0.00161)	(0.17744)	(0.15286)	(0.11706)	(0.00639)	(0.11160)	(0.06559)	(0.05063)	(0.00186)
	[-11.2102]	[-7.28146]	[-4.04080]	[-0.67766]	[-3.52642]	[-1.68738]	[-1.83350]	[0.43365]	[-8.90536]	[-4.36450]	[-3.95270]	[-0.34797]
Hong Kong	-0.061907	0.000129	8.12E-05	-1.65E-06	-0.599354	0.000118	-4.94E-06	-9.67E-07	7.88E-05	5.51E-05	1.31E-06	-1.31E-06
	(0.02141)	(3.7E-05)	(2.6E-05)	(1.2E-06)	(0.22777)	(2.4E-05)	(2.5E-05)	(1.8E-06)	(0.00181)	(3.6E-05)	(2.5E-05)	(1.0E-06)
	[-2.89126]	[3.49799]	[3.13255]	[-1.42507]	[-2.63143]	[4.86717]	[-0.19665]	[-0.52317]	[0.04360]	[1.53786]	[0.05207]	[-1.29941]
Japan	-0.071677	-0.191726	-0.086356	-0.000869	-0.212831	-0.116781	-0.049731	5.36E-05	0.010028	0.192640	0.031227	0.000419
	(0.03738)	(0.09774)	(0.06690)	(0.00246)	(0.17974)	(0.19161)	(0.14296)	(0.00763)	(0.01644)	(0.14328)	(0.09686)	(0.00290)
	[-1.91756]	[-1.96161]	[-1.29077]	[-0.35350]	[-1.18411]	[-0.60947]	[-0.34788]	[0.00703]	[0.61010]	[1.34448]	[0.32238]	[0.14457]
New Zealand	-1.398298	-0.187253	-0.114782	-0.0000592	-1.143527	-0.080749	-0.073163	-0.000286	-1.08161	0.120169	0.063082	0.000164
	(0.11473)	(0.05273)	(0.04963)	(0.00212)	(0.24754)	(0.13241)	(0.10600)	(0.00643)	(0.08170)	(0.03171)	(0.03179)	(0.00145)
	[-12.1873]	[-3.55100]	[-2.31258]	[-0.02795]	[-4.61964]	[-0.60984]	[-0.69019]	[-0.04452]	[-13.2394]	[3.78938]	[1.98437]	[0.11296]
Singapore	-1.065341	-0.275703	-0.200447	-0.001547	-0.438179	-0.437321	-0.649866	0.005572	-1.183228	-0.042047	-0.122809	-0.000185
	(0.09915)	(0.09565)	(0.08545)	(0.00312)	(0.20077)	(0.26561)	(0.20656)	(0.01009)	(0.09629)	(0.04892)	(0.04889)	(0.00194)
	[-10.7447]	[-2.88240]	[-2.34570]	[-0.49659]	[-2.18253]	[-1.64651]	[-3.14610]	[0.55205]	[-12.2887]	[-0.85957]	[-2.51211]	[-0.09542]

Developed Northern Europe

UK, Norway, Ireland, Finland, and Denmark are in this region to test the country level's stock market integration. Portfolio (A) P_{it} is constructed by adding the only UK in a portfolio. P_{jt} (A) is a portfolio containing all four countries, excluding the UK. In all panel models. P_{it} is used as a dependent variable, and P_{jt} is used as the independent variable. In five countries in the region, five models are one-time run-in periods. Further models are run in "pre, during, and post-crisis," providing important findings.

Northern Europe Descriptive Analysis

Denmark's average returns are the highest in the panel in the pre-crisis period, and Ireland has the lowest average monthly returns. Single time highest and lowest returns shown by Finland .31 and -.34. Finland leads the highest volatility, and the UK shows the lowest volatility. All the countries in the panel are negatively skewed. All countries are leptokurtic. In the crisis period, all the counties have shown negative average returns. The UK led the lowest negative return and the highest negative returns demonstrated by the UK. Finland and Norway show Single-time highest and lowest returns. Norway indicates the highest volatility, and the UK the lowest volatility. All the countries in the panel are negatively skewed except Finland. Finland s leptokurtic, and rest are platykurtic. The highest average monthly returns shown by Denmark and the lowest average monthly returns demonstrated by the UK are in the post-crisis period. Norway and Finland show Single-time highest and lowest returns. Ireland shows the highest volatility, and the UK leads to the lowest volatility. All the countries in the panel are negatively skewed and leptokurtic. In the post-crisis period, average panel returns are .45; in the pre-crisis period, countries' average returns are -.12. The results suggest a decline in returns and an average panel return of-2.5 in crisis countries.

Developed Northern Europe Correlation Analysis

The correlation between Denmark and Finland is moderate in pre, strong in crisis, and again moderate in post-crisis. The correlation between Denmark and Ireland is moderate in all three-time Correlation between Denmark Norway is strong in pre and during and moderate in post. The correlation between Denmark and the UK is strong in pre and during and moderate in post. The correlation between Finland and Ireland Is moderate in pre, high in crisis, and moderate in post. Finland and Norway are moderate in pre and during, and high in post-crisis Finland and the UK are moderate in pre, high in crisis, and moderate in post. Ireland and Norway are moderate in all three times. Ireland and UK are also moderate in all three times. Norway UK is also very strong in all three periods.

Northern Europe VECM

The results in "pre-crisis suggest all countries have a long-term association" with each other. Apart from "Denmark, the rest of the countries have a long-run" association in crisis. Post-crisis results are different than the pre-crisis crisis results. For example, all the countries are significantly associated in the long run. Also, in pre-crisis, apart from Norway, the rest of the countries are significantly associated in the short-run. And apart from Denmark and the UK, other countries are insignificantly associated with the rest panel countries, suggesting a short-term association. The results also suggest an insignicant association between the UK, Norway, and other panel countries post-crisis.

Table 6: VECM Results (Northern European)

	Pre-Crisis				During Crisis				Post Crisis			
Repressors'	ECT (-1)	Portfolio ret (-1)	Portfolio ret (-2)	Intercept	ECT (-1)	Portfolio ret (-1)	Portfolio ret (-2)	Intercept	ECT (-1)	Portfolio ret (-1)	Portfolio ret (-2)	Intercept
DINMARK	-0.327134	-0.130159	-0.070485	-0.001231	-0.210892	-0.037006	-0.118746	0.001540	-0.372579	0.452885	0.134891	3.45E-05
	(0.08587)	(0.06456)	(0.05011)	(0.00293)	(0.20925)	(0.17092)	(0.11536)	(0.00785)	(0.03863)	(0.05783)	(0.04972)	(0.00224)
	[-3.8096]	[-2.01615]	[-1.40665]	[-0.42088]	[-1.0078]	[-0.21651]	[-1.02933]	[0.19609]	[-9.64582	[7.83145]	[2.71290]	[0.01542]
FINLAND	-0.9036	-0.684928	-0.560992	-0.002293	-1.285672	-0.782072	-0.334215	0.004324	-0.930674	0.158791	-0.013019	-0.00048
	(0.08524)	(0.10137)	(0.10062)	(0.00553)	(0.24659)	(0.16931)	(0.13704)	(0.01015)	(0.07192)	(0.05717)	(0.05606)	(0.00246)
	[-10.600]	[-6.75639]	[-5.57532]	[-0.41492]	[-5.2137]	[-4.61912]	[-2.43874]	[0.42617]	[-12.940]	[2.77759]	[-0.23225]	[-0.19541]
IRELAND	-0.864158	0.101876	0.158960	-0.001578	-0.51696	-0.185666	-0.476555	0.004702	-0.004641	0.368747	0.309599	-0.000672
	(0.07442)	(0.03796)	(0.03693)	(0.00280)	(0.22833)	(0.23444)	(0.16863)	(0.01182)	(0.00108)	(0.08733)	(0.06586)	(0.00265)
	[-11.612]	[2.68376]	[4.30452]	[-0.56292]	[-2.2641]	[-0.79197]	[-2.82596]	[0.39788]	[-4.3034]	[4.22231]	[4.70120]	[-0.25387]
UK	-0.276413	-0.04232	-0.079556	-0.000836	-0.546479	-0.318664	-0.221593	0.004298	-1.159817	-0.007826	-0.029781	-0.000593
	(0.09707)	(0.04969)	(0.03791)	(0.00222)	(0.24769)	(0.24320)	(0.17527)	(0.01283)	(0.08289)	(0.04673)	(0.04628)	(0.00208)
	[-2.8475]	[-0.85171]	[-2.09857]	[-0.37662]	[-2.2062]	[-1.31]	[-1.26429]	[0.33505]	[-13.991]	[-0.16748]	[-0.64346]	[-0.28562]
NORWAY	-0.136036	-0.015377	0.044940	-0.000342	-1.4076	-0.544304	-0.174779	0.002515	-1.363982	-0.011184	-0.019445	-0.000305
	(0.06228)	(0.07498)	(0.05773)	(0.00334)	(0.32124)	(0.14497)	(0.10483)	(0.00695)	(0.09791)	(0.03702)	(0.03670)	(0.00169)
	[-2.1843]	[-0.20508]	[0.77846]	[-0.10241]	[-4.3818]	[-3.75465]	[-1.66728]	[0.36198]	[-13.931]	[-0.30210]	[-0.52982]	[-0.18061]

Developed Western Europe

We included Switzerland, Netherlands, Germany, France, and Austria to test the stock market integration at the country level. The study developed Portfolio (A) (P_{it}) by adding all four countries, excluding Switzerland. We included all four countries in portfolio P_{jt} (A) except Switzerland. The study used (P_{it}) as a dependent variable and (P_{jt}) as independent variables in all panel models. We tested the model in "pre, during, and post-crisis." In the case of five countries in the region, five models were run one-time in the periods.

Western Europe Descriptive Analysis

Austria's average returns are highest in the panel in the pre-crisis period, and Netherland has the lowest average monthly returns. Germany and the Netherlands show Single-time highest and lowest returns. Germany offers the highest volatility, and Switzerland shows the lowest volatility. All the countries in the panel are negatively skewed. Austria has normal kurtosis, and the rest are platykurtic. In the crisis period, all the counties have shown negative average returns. Switzerland offered the lowest negative return and the highest negative returns shown by Austria. Austria shows Single-time highest and lowest returns. Austria indicates the highest volatility, and Switzerland shows the lowest volatility. All the countries in the panel are negatively skewed. Austria is leptokurtic, and the rest are platykurtic. In the post-crisis period, Netherland's the highest average monthly returns and the lowest average monthly returns shown by Austria. Austria offers the highest and lowest returns, shown by Austria's Highest volatility and Switzerland's lowest volatility. All the countries in the panel are negatively

skewed, and all are leptokurtic. In the post-crisis period, average panel returns are .35; in the pre-crisis period, countries' average returns are .30. And returns decline for crisis countries with an average panel returns of -.13

Developed Western Europe Correlation Analysis

Austria and France have a moderate correlation in pre and high both during and post-crisis. Austria, Germany is also moderate, both pre and high during and post-crisis. There is a moderate correlation between Austria and Netherlands in pre, high in, and moderate post-crisis. We discovered a moderate correlation between Austria and Switzerland before the crisis, a strong correlation during the crisis, and a moderate correlation in post-crisis. France and Germany's relationship is moderate in pre-, high correlation during, and moderate post-crisis situations. France and Netherlands are also very strong in all three periods. France and Switzerland are also very strong in all three periods. Germany and Netherlands are also very strong in all three periods. Germany and Switzerland are also very strong in all three periods. Netherlands and Switzerland is also very strong in all three periods.

Table 7: VECM Results (Western European)

	Pre Crisis	During Crisis	Post Crisis									
Regressors	**ECT (-1)**	**Portfolio ret (-1)**	**Portfolio ret (-2)**	**Intercept**	**ECT (-1)**	**Portfolio ret (-1)**	**Portfolio ret (-2)**	**Intercept**	**ECT (-1)**	**Portfolio ret (-1)**	**Portfolio ret (-2)**	**Intercept**
Austria	-0.49557	-0.168801	-0.01612	-0.00075	0.67605	0.764804	-0.58266	0.00194	0.05954	0.402836	0.14252	0.00076
	(0.0874)	(0.07311)	(0.0538)	(0.0024)	(0.2457)	(0.49571)	(0.3362)	(0.0118)	(0.0687)	(0.16287)	(0.1123)	(0.0035)
	[-5.668]	[-2.3087]	[-0.2991]	[-0.300]	[2.7507]	[1.54283]	[-1.7330]	[0.1680]	[0.8660]	[2.47343]	[1.2688]	[0.2095]
Faranc	-0.49592	-0.364328	-0.13711	-0.00131	-1.15432	-0.428985	0.02555	0.00242	-1.19222	-0.61529	-0.39457	-0.00013
	(0.1476)	(0.11177)	(0.0835)	(0.0028)	(0.3476)	(0.21327)	(0.1758)	(0.0076)	(0.1745)	(0.10649)	(0.0774)	(0.0024)
	[-3.358]	[-3.2595]	[-1.6410]	[-0.459]	[-3.320]	[-2.0114]	[0.1453]	[0.3184]	[-6.831]	[-5.7781]	[-5.0942]	[-0.054]
Germany	0.12044	0.021328	0.26033	-0.00118	-1.56859	-0.428014	-0.03647	0.00317	-1.47247	-0.639072	-0.34827	-0.00062
	(0.1005)	(0.15431)	(0.1143)	(0.0035)	(0.3527)	(0.23790)	(0.1835)	(0.0088)	(0.1387)	(0.09108)	(0.0734)	(0.0025)
	[1.1977]	[0.13821]	[2.2758]	[-0.329]	[-4.447]	[-1.799]	[-0.1987]	[0.3574]	[-10.60]	[-7.0163]	[-4.7413]	[-0.244]
Netherland	-1.28582	-0.573888	-0.46019	-0.00122	-0.87911	-0.111028	-0.01919	0.00392	0.41545	0.500769	0.17173	-0.00043
	(0.1486)	(0.10500)	(0.0850)	(0.0029)	(0.3263)	(0.23469)	(0.1869)	(0.0088)	(0.0805)	(0.10252)	(0.0741)	(0.0023)
	[-8.648]	[-5.4658]	[-5.4143]	[-0.408]	[-2.693]	[-0.4730]	[-0.1026]	[0.4444]	[5.1562]	[4.88459]	[2.3161]	[-0.1871]
Switzerland	-0.62615	-0.397436	-0.27774	-0.00073	-0.12292	0.018217	-0.18145	0.00233	0.12885	0.188392	0.05599	-0.00028
	(0.13342)	(0.07849)	(0.05773)	(0.00230)	(0.18514)	(0.16337)	(0.12815)	(0.00684)	(0.07586)	(0.06710)	(0.04732)	(0.00181)
	[-4.6929]	[-5.0633]	[-4.8108]	[-0.3201]	[-0.6639]	[0.11150]	[-1.4159]	[0.3409]	[1.6986]	[2.80784]	[1.1832]	[-0.1553]

Western Europe VECM

All the "countries have a long-run association with other countries" in the panel in pre-crisis except Germany. Australia and Switzerland are insignificant as dependent variables during the crisis, whereas the rest have long-run linkages. In pre-crisis, "short-run associations exist between all the countries" in the panel. Only France was significant among other panel countries in that region during the crisis period. The results suggest

an insignificant short-term relationship in those countries. The results suggest a "short-run association between all other panel countries in the post-crisis period. At the same time post-crisis period results "Australia and Switzerland have no significant long-run relationship" with other countries in the region.

Developed Southern Europe

In Portfolio (A) $P_{it,}$ the study incorporated only Sweden. We included "Sweden, Spain, Portugal, and Italy in this region." We included all four countries in portfolio P_{jt} (A), excluding Sweden. The study used (P_{it}) as a dependent variable and (P_{jt}) as independent variables in all panel models. We tested the model in "pre, during, and post-crisis." In the case of five countries in the region, five models were run one-time in the periods.

Southern Europe Descriptive Analysis

The pre-crisis period average returns of Spain are highest in the panel, and Sweden shows the lowest average monthly returns. Results suggest that Sweden and Portugal offer the highest and lowest returns, respectively, whereas we few found the highest volatility in the Italian stock exchange. All the countries in the panel are negatively skewed and are leptokurtic. The study also found that all the countries showed negative average returns during the crisis. Sweden showed the lowest negative return, and Italy showed the highest negative returns.

We found single-time highest and lowest returns for Italy and Portugal, respectively. Also, data suggest the highest volatility in Italy and the lowest for Portugal. All the countries in the panel are negatively skewed. Portugal is leptokurtic, and the rest are platykurtic. Sweden's data shows the highest average monthly returns, and Portugal has the lowest average monthly returns in the post-crisis period. Single-time highest and lowest returns are in Spain and Portugal, respectively. Data related to Italy shows the highest volatility and Sweden's lowest volatility. All the panel countries are negatively skewed except Spain, Italy's kurtosis is normal, and the rest are leptokurtic. In the post-crisis period, the average panel return is are -0.11. In the pre-crisis period, the average return of countries is .22. And in crises, countries' returns declined the average panel return is -1.5.

Developed Southern Europe Correlation Analysis

Italy and Portugal have a moderate correlation in pre-crisis, high during the crisis, and moderate post-crisis. Italy and Spain have a strong correlation in all three periods. At the same time, we found Italy and Sweden are strongly correlated in (i) pre-crisis and (ii) during the crisis. And has a moderate correlation in post-crisis. Portugal and Spain have a moderate correlation in pre-crisis, high during the crisis, and moderate post-

crisis. Portugal and Sweden have a strong correlation in pre-crisis and during the crisis. And moderate in post-crisis. Spain and Sweden have a strong correlation in (i) pre-crisis and (ii) during the crisis, and (iii) moderate in post-crisis.

Southern Europe VECM

Apart from Sweden, other countries in the panel have "a high association in the long run" in pre-crisis. Besides Sweden, the rest of the countries "have a high association" with each other during a crisis. Sweden and Portugal are insignificantly associated with other panel countries' crises, suggesting an insignificant relationship. In pre-crisis, besides Sweden, the rest of the countries are highly associated in the short run. In post-crisis, we found an insignificant association between Sweden and other countries.

Table 8: VECM Results (Southern European)

	Pre-Crisis				During Crisis				Post Crisis			
Regressors	**ECT (-1)**	**Portfolio ret (-1)**	**Portfolio ret (-2)**	**Intercept**	**ECT (-1)**	**Portfolio ret (-1)**	**Portfolio ret (-2)**	**Intercept**	**ECT (-1)**	**Portfolio ret (-1)**	**Portfolio ret (-2)**	**Intercept**
ITALY	-0.74429	-0.306871	-0.263285	-0.00105	-1.089371	-0.545715	-0.407686	0.002240	-0.790243	0.271452	0.038920	0.000265
	(0.16373)	(0.10205)	(0.07204)	(0.00302)	(0.35804)	(0.29965)	(0.20067)	(0.00886)	(0.07740)	(0.07898)	(0.07608)	(0.00324)
	[-4.5459]	[-3.00701]	[-3.65447]	[-0.34820]	[-3.0425]	[-1.82120]	[-2.03162]	[0.25277]	[-10.210]	[3.43694]	[0.51154]	[0.08178]
PORTUGAL	-1.05416	-0.541206	-0.237188	-0.000742	-0.999959	-0.251775	-0.217693	0.001751	-0.105025	0.374330	0.270265	-0.000629
	(0.14482)	(0.09204)	(0.06560)	(0.00308)	(0.35765)	(0.22799)	(0.15844)	(0.00822)	(0.01890)	(0.08448)	(0.06641)	(0.00320)
	[-7.2793]	[-5.87980]	[-3.61541]	[-0.24058]	[-2.7958]	[-1.10433]	[-1.37395]	[0.21312]	[-5.5566]	[4.43076]	[4.06966]	[-0.19667]
SPAIN	-0.938758	-0.456388	-0.154973	-0.001611	-0.988439	-0.700263	-0.386226	0.004433	-0.847005	0.274242	0.166338	6.73E-05
	(0.18203)	(0.10770)	(0.08048)	(0.00347)	(0.36081)	(0.29904)	(0.20170)	(0.00877)	(0.08107)	(0.07290)	(0.07034)	(0.00315)
	[-5.1572]	[-4.23748]	[-1.92562]	[-0.46372]	[-2.7395]	[-2.34172]	[-1.91483]	[0.50570]	[-10.447]	[3.76167]	[2.36466]	[0.02135]
SWEDEN	0.053654	-0.068046	-0.027742	-0.003404	0.335111	0.470285	-0.233184	0.010615	-1.075148	0.013915	0.008760	-0.000101
	(0.13628)	(0.20505)	(0.14006)	(0.00471)	(0.31707)	(0.25334)	(0.16941)	(0.00929)	(0.10076)	(0.03648)	(0.03601)	(0.00217)
	[0.39370]	[-0.33186]	[-0.19807]	[-0.72277]	[1.05690]	[1.85637]	[-1.37646]	[1.14265]	[-10.670]	[0.38144]	[0.24324]	[-0.04643]

Developed G7 Countries

The study included "Canada, France, Germany, Italy, Japan, the UK, USA" to test the country-level stock market integration. In Portfolio (A), P_{it} we incorporated only Australia. The portfolio P_{jt} (A) includes all countries besides Canada. We treated Pit as a dependent variable P_{jt} as an independent variable. In seven countries in the region, seven models were run one time. Further, we tested the models in "pre, during, and post-crisis."

G7 Countries Descriptive Analysis

Canada's average returns are highest in the panel in the pre-crisis period, and the UK has the lowest average monthly returns. Single time highest and lowest returns shown by Germany .17 and -.22. Germany leads the highest volatility, and the UK offers the lowest volatility. All the countries in the panel are negatively skewed. Japan is platykurtic; New Zeeland shows normal kurtosis, and the rest are leptokurtic. In the crisis period, all the counties have shown negative average returns. Canada led the lowest negative

return and the highest negative returns shown by Japan. Single-time highest and lowest returns shown by Canada .16 and Japan -.25.

Germany offers the highest volatility, and the UK leads the lowest volatility. All the countries in the panel are negatively skewed. Japan is leptokurtic, and the rest are platykurtic. The USA has the highest average monthly returns, and Italy has the lowest post-crisis. Single-time highest and lowest returns were of Japan and Germany .14 and -.18, respectively. Italy offers the highest volatility, and Canada the lowest volatility. All the countries in the panel are negatively skewed. Italy is platykurtic, and the rest all are leptokurtic. In the post-crisis period, average panel returns are .35; in the pre-crisis period, average returns of countries are .12. In the case of crisis countries, returns decline, showing an average panel return of -1.5.

G7 Countries Correlation Analysis

The correlation between Canada and France is strong in pre-crisis, but it is weak during crisis and post-crisis. The correlations of "Canada with Germany, Italy, Japan, and USA" are weak in all three times period. At the same time the correlations of "France with Germany, Italy, UK, USA" are strong on the three time periods. The correlation between France and Japan is moderate in pre-crisis, high in crisis, and again moderate in the post-crisis period. The correlation between Germany and Italy, the UK and the USA are also very strong in all three periods. Germany and Japan's correlation is moderate in pre-crisis, high in crisis, and moderate in post-crisis. Correlation between Italy Japan has a moderate correlation in pre-crisis, high in crisis, and moderate post-crisis. The correlation between Japan and UK is also very strong in all three periods. The correlation between Japan and the USA is moderate in pre-crisis, high in crisis, and moderate in the post-crisis period.

G7 VECM

Based on VCM, we assessed "short-run and long-run linkages" between all countries of that region. The results suggest "all the countries have a long-run association with other countries in the panel in pre-crisis." In case of a crisis, only Canada and Japan are insignificant as dependent variables; the rest have long-run linkages. In the post-crisis period, Canada, Japan, and Italy have an "insignificant long-run association with other countries" in the region. In pre-crisis, we found "short term associations between all countries" in the region

The results in crisis suggest the USA, Italy, and Japan have an insignificant association "with other panel countries in that region," suggesting an insignificant short-run relationship in those countries. Results during the post-crisis period suggest an "insignificant short-run association" between japan and other panel countries.

Table 9: VECM Results G7 Countries

	Pre-Crisis	During Crisis	Post Crisis									
Regressors	**ECT (-1)**	**Portfolio ret (-1)**	**Portfolio ret (-2)**	**Intercept**	**ECT (-1)**	**Portfolio ret (-1)**	**Portfolio ret (-2)**	**Intercept**	**ECT (-1)**	**Portfolio ret (-1)**	**Portfolio ret (-2)**	**Intercept**
CANADA	-0.803	-0.424	-0.169	-0.001	0.138919	-0.540	-0.307	0.003106	-0.073	-0.113	-0.148	0.000
	(0.08459)	(0.05521)	(0.03456)	(0.00187)	(0.19928)	(0.17251)	(0.07879)	(0.00666)	(0.06366)	(0.04356)	(0.02574)	(0.00131)
	[-9.49109]	[-7.67819]	[-4.89077]	[-0.53187]	[0.69712]	[-3.13001]	[-3.89444]	[0.46666]	[-1.15381]	[-2.59321]	[-5.76451]	[-0.30954]
FARANC	-0.692	-0.391	-0.183	-0.001	-1.253	-0.531	-0.389	0.002631	-1.165	-0.456	-0.265	-0.001
	(0.11536)	(0.10099)	(0.06698)	(0.00228)	(0.26866)	(0.19128)	(0.13090)	(0.00602)	(0.11075)	(0.06769)	(0.05009)	(0.00185)
	[-5.99656]	[-3.87529]	[-2.72975]	[-0.61673]	[-4.66457]	[-2.77653]	[-2.96918]	[0.43693]	[-10.5190]	[-6.73607]	[-5.28409]	[-0.32891]
GERMANY	-0.467	-0.355	-0.057	-0.001	-1.763	-0.733	-0.503	0.003769	-1.297	-0.512	-0.258	-0.001
	(0.09926)	(0.13493)	(0.08859)	(0.00289)	(0.28961)	(0.21948)	(0.14800)	(0.00682)	(0.09563)	(0.06364)	(0.05096)	(0.00195)
	[-4.70685]	[-2.62936]	[-0.64446]	[-0.42078]	[-6.08884]	[-3.33848]	[-3.39853]	[0.55267]	[-13.5629]	[-8.05238]	[-5.05988]	[-0.38022]
ITALY	-0.557	-0.190	-0.079	-0.001	-0.796	-0.393	-0.203	0.002062	0.168922	0.403277	0.014793	0.000
	(0.10093)	(0.08560)	(0.05766)	(0.00213)	(0.23329)	(0.20689)	(0.13895)	(0.00633)	(0.04471)	(0.11116)	(0.07676)	(0.00258)
	[-5.52290]	[-2.22224]	[-1.36625]	[-0.51989]	[-3.41141]	[-1.89733]	[-1.46256]	[0.32588]	[3.77803]	[3.62777]	[0.19273]	[-0.00717]
JAPAN	-0.316	-0.163	-0.056	-0.001	-0.278	-0.068	-0.084	0.000257	-0.054	0.125487	0.090582	0.000493
	(0.05588)	(0.06469)	(0.04418)	(0.00193)	(0.19225)	(0.16840)	(0.11424)	(0.00613)	(0.03020)	(0.08649)	(0.05947)	(0.00232)
	[-5.66222]	[-2.52704]	[-1.26295]	[-0.51453]	[-1.44792]	[-0.40388]	[-0.73679]	[0.04194]	[-1.77611]	[1.45095]	[1.52319]	[0.21297]
UK	-0.316	-0.163	-0.056	-0.001	-1.454	-0.456	-0.421	0.003135	-1.568	-0.182	-0.102	0.000
	(0.05588)	(0.06469)	(0.04418)	(0.00193)	(0.28952)	(0.17124)	(0.11494)	(0.00541)	(0.09691)	(0.03515)	(0.03051)	(0.00138)
	[-5.66222]	[-2.52704]	[-1.26295]	[-0.51453]	[-5.02055]	[-2.66407]	[-3.65847]	[0.57992]	[-16.1810]	[-5.17287]	[-3.35693]	[-0.25455]
USA	-1.057	-0.293	-0.098	-0.001	-0.742	-0.109	-0.179	0.003753	-1.742	0.088396	-0.254	-0.102
	(0.11464)	(0.05617)	(0.04035)	(0.00173)	(0.26628)	(0.22940)	(0.14987)	(0.00671)	(0.09772)	(0.04911)	(0.04117)	(0.03454)
	[-9.22291]	[-5.21008]	[-2.43823]	[-0.37897]	[-2.78662]	[-0.47522]	[-1.19506]	[0.55926]	[-17.8298]	[1.79999]	[-6.17691]	[-2.95064]

Results and Discussion

We tested five different data sets of developed countries (G7, Pacific Region, Northern Europe, Western Europe, and Southern Europe). Pre, during, and post-crisis periods are used to check the crisis effects in diversification and different integration levels at different times. Short-run diversification is available for Sweden only in the pre-crisis period, Portugal and Sweden have short-run diversification during the crisis, and none in the post-crisis. Sweden has long-run diversification opportunities in "pre and during crisis periods" with panel countries in the Southern European Region. There are no diversification opportunities in the post-crisis period. After the crisis, the diversification opportunities decreased for international investors in the Southern European Region. After the crisis, the diversification opportunities decreased for international investors in the Southern European Region.

Germany has "long-run diversification opportunities" in the Western European Region in the "pre-crisis period." While during and post-crisis, Australia and Switzerland both have long-run diversification opportunities. The study did not find any short-run diversification opportunities in pre and post-crisis. During the crisis period, Austria,

Germany, Netherland, and Switzerland have short-run diversification opportunities. In the Northern Europe region, no long-run diversification opportunity is available pre and post-crisis. And only Denmark has the diversification opportunity during the crisis period. Norway has a Short-run diversification opportunity in pre-crisis. In contrast, Denmark and the UK have no such opportunities during the crisis period. And the UK and Norway in the post-crisis period have diversification opportunities.

A long-run diversification opportunity is available for Japan only during pre and crisis periods in the Pacific region. In pre-crisis, short-run diversification is available in Japan. Hong Kong and Japan both have a long-run diversification opportunity post-crisis period. Australia, Japan, and New Zealand have the chance during the crisis period, while Hong Kong and Japan have no such opportunities in the "post-crisis." For the G7 panel, no extended run diversification is possible; only Canada and Japan have the opportunity during the crisis, while in the post-crisis period, Canada, Japan, and Italy have the opportunity. There is no short opportunity available in pre-crisis, USA, Italy, and japan during a crisis while only Japan has in the post-crisis period. These findings can help international investors benefit from short- and long-run diversification within developed regions or countries. Further, it is also helpful to understand the changing pattern of integration and diversification opportunities in the pre, during, and post-crisis periods. Future studies can extend other geographic regions and other asset classes

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Market Forces
College of Management Sciences

Volume 17, Issue 1, June 2022
https://doi.org/10.51153/mf.v7i1.543

Strategic Framework for Achieving Sustainability in Telecom Supply Chain: A Case Study of Pakistan

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Abstract

Current research aims to unpack the issues faced by the telecom sector of Pakistan to sustain its supply chain management. While using the qualitative case study method, this research has analyzed the available framework to achieve sustainability in the supply chain. The study used data triangulation and extracted data from Telecom company's documentation, on-site observation & semi-structured interviews. Based on primary and secondary data, we have proposed a strategic framework for developing sustainability in the supply chain of telecom companies. The framework provides the step-by-step implementation of all dimensions of sustainability upstream of a supply chain. The developed framework can be used as a roadmap by the Telecom sector to make their supply chain more sustainable. The research focuses on the upstream supply chain, and the findings argue that telecom supply chains can only use the proposed framework upstream to achieve sustainability.

Keywords: *Sustainability, upstream, supply chain, telecom, framework, Pakistan.*

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Introduction

Earth provides natural resources for all human needs and not only for the planet's present population but for all the generations to come. These natural resources are limited, and we should utilize them optimally. Cernev and Fenner (2020) also observed that the sustainability of Earth is at risk due to current manufacturing trends. Thus there is a need to develop environmentally friendly processes. The industry requires processes to resolve such issues as the world's top 2000 plus companies, and their supply chains operations contribute an additional 20% to gas emission (Sugak, 2021). Walmart's SC processes, for example, produce 90% of its total emissions (Birchall, 2010). While using these resources, preserving the natural ecosystem and providing natural resources for further development are necessary. This approach to resource utilization is known as sustainable development, classically defined as utilizing resources for the present generation and leaving sufficient resources for future generations (Bengtsson et al., 2018; Ghadge et al., 2019).

Given the above arguments, sustainability/ sustainable development has become popular with policymakers and regulatory bodies. Access to information through the internet and social media exposure has increased consumers' concern about using environmentally friendly products. Consumers in the present era expect firms to use environmentally friendly materials in their supply chain process (Su, Liu & Du, 2020). The supply chain is an important area to initiate such change because supply chains and global supply chains affect environmental sustainability (Abbasi & Nilsson, 2012; Li, Fang & Song, 2019). Pakistan is ranked 71st out of 223 countries for its foreign exports. It has a population of 19 million, out of which 38% of the population lives in cities and uses various products and services (Raza, Ramish & Nazar, 2020; Hanif, 2021). Also, the location and significant cotton producer make Pakistan an important player from an export perspective. Developing sustainable SC is significant for Pakistan to continue exporting its products and remain competitive. Abbasi (2012) in a comprehensive study, attempted to find the general sustainability SC practices in the manufacturing industries of Pakistan, including electronics, automotive, leather, chemicals, etc. Despite being comprehensive, Abbasi's (2012) study did not cover service sectors like health care, hospitality, and telecommunication.

The telecommunication industry is important from Pakistan's perspective. It has more than 182 million subscribers as of 2021. Its contribution to the National exchequer in 2020 was Rs. 287 billion and raised $622.5 million in foreign direct Investment (FDI). With the introduction of 3G and 4G cellular technology in Pakistan, the sector will grow further, requiring the companies to work with various suppliers to improve and expand their network (Hanif, 2021).Based on an extensive literature review on Supply Change

Management (SCM) and sustainability, the authors found a significant gap between sustainability literature and practical implementation in the industry (Ejsmont et al., 2020). Most past studies on SSCM are theoretical, focusing on triple-bottom-line criteria and lacking a framework that can be practically used applicable in the industry (Ashby, et al., 2012; Allaoui et al., 2019).

Studying sustainability in the supply chains of Telecom companies can help to identify the best sustainable SC practices which the telecom sector can adopt to improve efficiency, reduce cost & waste, and gain a competitive advantage. This research is a case study that analyzes the sustainable SCM practices of a Telecom company in Pakistan. This study aims to develop a comprehensive framework for achieving sustainability in the telecom sector's upstream supply chain. A case study is selected as the authors study a contemporary phenomenon over which the researchers have no degree of control (Yin, 2013). Although a case study mainly focuses on the "how?" or "why?" type of questions, it is equally applicable to exploratory research (Yin, 2013).

Literature Review

Supply Chain Management & Sustainable SCM

Ayağ (2015) defines Supply Chain Management as a "process of integrating/utilizing suppliers, manufacturers, warehouses, and retailers so that goods are produced and delivered at the right quantities, and at the right time while minimizing costs as well satisfying customer requirements." Supply Chain Management is also defined as "a mix of predominantly cooperative events and associations that connect businesses to provide the end customer with the suitable product and service through value creation procedures" (Braziotis et al., 2013). A more specific definition related to organizations is stated by Pojasek (2012), which defines sustainability/ sustainable development as "the ability of an organization to achieve its tasks for ecological stewardship, community welfare, and financial success over the years although being held responsible to its shareholders." It should also be noted that within the literature, the terms "sustainable development" and "sustainability" have been used interchangeably by authors (Kiewiet & Vos 2007; Presley et al., 2007).

Perhaps the most comprehensive definition of sustainable supply chain management is provided by United Nations Global compact initiatives, which defines it as "Supply Chain sustainability is the managing ecological, communal and financial effects, and the reinforcement of good governance practices, through the developments of goods and services. SC sustainability aims to make, protect, and produce long-term ecological, communal and financial value for all shareholders involved in carrying products and

services to market." (Orzes et al., 2018).

The effort to develop and manage such a supply chain is known as sustainable supply chain management (SSCM). In SSCM, firms use resources efficiently from one end to another end of the supply chain (Li, Fang & Song, 2019). Given its importance, firms globally use SSCM for sustainability and growth. Managing such a sustainable supply chain is becoming an essential strategic aspect for organizations around the globe (Seuring, 2013; Laosirihongthong et al., 2020). The terms "sustainable supply chain management (SSCM)" and supply chain sustainability have been interchangeable. Sustainability refers to the skill of sustaining or ability to tolerate (Zailani et al., 2012). Similarly, Seuring and Muller (2008) define SSCM as managing material, data, and monetary flows along with collaboration among organizations along with the SC while taking areas from all three magnitudes of sustainable development, i.e., economic, environmental, and social, into considerations which are resulting from buyers and stakeholder needs.

Dimensions of Supply Chain Sustainability

Since 2011 Sustainable Supply Chain Management (SSCM) has been a thriving area of research (Seuring & Muller, 2008). Supply chain sustainability has three dimensions: environmental sustainability, economic sustainability, and social sustainability. Considering all these dimensions, Fish (2015) asserts that SSCM is the "tactical, apparent integration and success of a company's social, environmental, and economic objectives in the complete harmonization of essential inter-organizational corporate procedures for refining the long term financial performance of a company and its supply chains" (Fish, 2015). Most definitions of SSCM have focused on adding Triple Bottom Line approach criteria into the definition of Supply Chain Management (Elkington, 1998; Vega-Mejía, Montoya-Torres& Islam, 2019).The supply chain sustainability is a result of combining sustainability and SCM. Sustainability is a conceptual framework for aligning social, environmental, and economic dimensions (Fish, 2015). These three dimensions in light of Fish (2015) and other authors are:

1. Environmental Sustainability: Reduce the utilization of natural resources consumed in the end product and the production process.
2. Economic sustainability: sustainability efforts must be economically sustainable, or the business will lose and might be closed.
3. Social Sustainability: The dimension of sustainability with minimal research is based on internal and external factors such as motivation & value addition to society.

Extant literature has discussed it in terms of environmental sustainability. Also, researchers have used the terms sustainability and green interchangeably. One example is Genchev et al.'s (2011) research on reverse logistics, in which terms like sustainability and green are used interchangeably with one another and side by side. Many researchers, including Genchev et al. (2011), green practices will make companies environmentally sustainable, reduce costs, increase customer loyalty and enhance brand image. To name them, a few are green logistics, reverse logistics, green manufacturing and Eco-packaging. Researchers also assert that SSCM practices can help Pakistani manufacturers get ISO 14001certifaction (Abbasi, 2012).

Stakeholder Theory

Researchers have extensively used stakeholder theory in explaining sustainability management research (Schaltegger, Hörisch & Freeman, 2019). A review of extant literature suggests that many researchers have vaguely discussed the theory or misinterpreted it (Freudenreich, Lüdeke-Freund & Schaltegger, 2020).Given these deficiencies, researchers believe that there is a need to focus on sustainability challenges and how this theory addresses these challenges (Torelli, Balluchi & Furlotti, 2020). Sustainability management is a process of formulating, implementing, monitoring, and evaluating decisions related to the sustainability of the environment (Govindan, Shaw & Majumdar, 2021).

Researchers believe that apart from developing a sustainability framework, researchers can extend traditional theories for understanding sustainability management (Schaltegger, Hörisch & Freeman, 2019). For understanding the fit between stakeholder theory and sustainability management, it is important to conceptualize stakeholders. Stakeholders are "groups and individuals who can affect or be affected." In value creation of supply change (Freeman, 2010). There are different definitions of stakeholders, and all of them cannot it is not possible to align all of them with sustainable management. Therefore, we have focused on the actual use of the theory. The stakeholder theory does not refer to the company but the relationship between a firm and its stakeholders (Freeman, 2010). Thus, it is necessary to focus on the actual use of the stakeholder theory.

Bell, McGillivray and Pedersen (2013) assert that sustainability management and stakeholder theory focus on the aim and purpose of business entities to create value for the stakeholder. Stakeholder theory, in broad terms, focuses on the interdependencies between an organization and the societal environment (Schaltegger, Hörisch & Freeman, 2019). At the same time, while focusing on the societal and ecological environment, corporate sustainability highlights the association between organizations and the

societal environment (Freeman, 2010).

In short, researchers argue that both concepts are not limited to-short term shareholders' value, but they, in broad terms, refer to understanding a firm and stakeholder "embeddedness, dependencies, obligations, abilities" (Hussain et al., 2018). Sustainable management and stake theory assume that ethical issues do not conflict with business activities but are interlinked (Loorbach & Wijsman, 2013). Thus, firms should not be part of the supply chain with poor sustainability practices.

Structure of a Telecom Supply Chain

For developing a sustainable upstream supply chain in the telecom sector, it is essential to understand the structure of a telecom SC. Below is the structure of the telecom supply chain that which we have adapted from the work done in telecom supply chain management by (Reyes, Raisinghani & Singh, 2002).

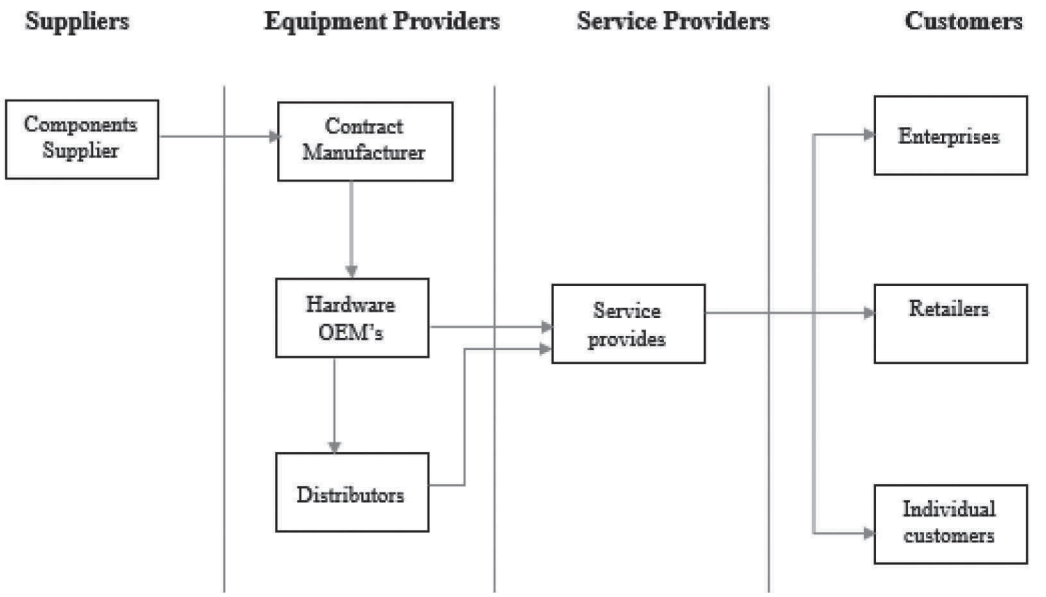

Figure 1: Telecom Supply Chain (Reyes, Raisinghani & Singh, 2002)

In the context of the current research, the selected organization is a service provider. Since the focal firm is a service provider, its upstream supply chain consists of suppliers and equipment manufacturers with whom the firm obtain raw materials.

Related Works

Research on SSCM has significantly increased in the last few years (Seuring & Muller, 2008; Seuring, 2013). The study has discussed some relevant and existing frameworks regarding SSCM below. Apart from a few recent studies (Faroqi, Siddiquee, Ullah, 2019; Ahmadi, Petrudi & Wang, 2017), most papers have focused on conceptual/ theoretical/ literature-based frameworks. A literature review suggests that most past studies have limitations in terms of context generalizability. We also found that most developed frameworks have focused on the green aspect of a sustainable supply chain. This paper contributes to the body of knowledge by developing a strategic framework for all three areas of sustainability: people, profit, & planet. Our findings can help the telecom industry achieve sustainability in its supply chain.

Carter and Roger (2008) developed a theoretical framework based on an extensive literature review. The author concluded that integrating social, economic, and environmental factors from the triple bottom line (3BL) perspectives is beneficial for firms. The authors believe that SC would help firms compete with other business entities. The competitors would not replicate their SC model, resulting in substantial profit in the long run. Similarly, Seuring and Muller (2008) reviewed 191 articles from 1994 to 2007 and highlighted issues, incentives, and opportunities in SSCM, followed by a framework that summarized the major literature related to SC. The study also proposed strategies: (1) for reducing risks associated with supplier management and performance, and (11) how firms can structure their SC for using sustainable products. Given these discussions, we argue that most researchers have focused on green and environmental issues and have neglected social aspects and the integration of the three dimensions of sustainability.

After a thorough review of the literature and analyzing different frameworks, Beske & Seuring (2014) identified various areas essential for SSCM implementation presented below, and a framework for best practices, presented in Figure 2.

1. Orientation/Mindset towards SSCM.
2. Plans and initiatives for SSCM.
3. Collaboration with stakeholders for SSCM.
4. Managing risk in SSCM projects.
5. Proactive action for increasing Sustainability in Supply Chain Management.

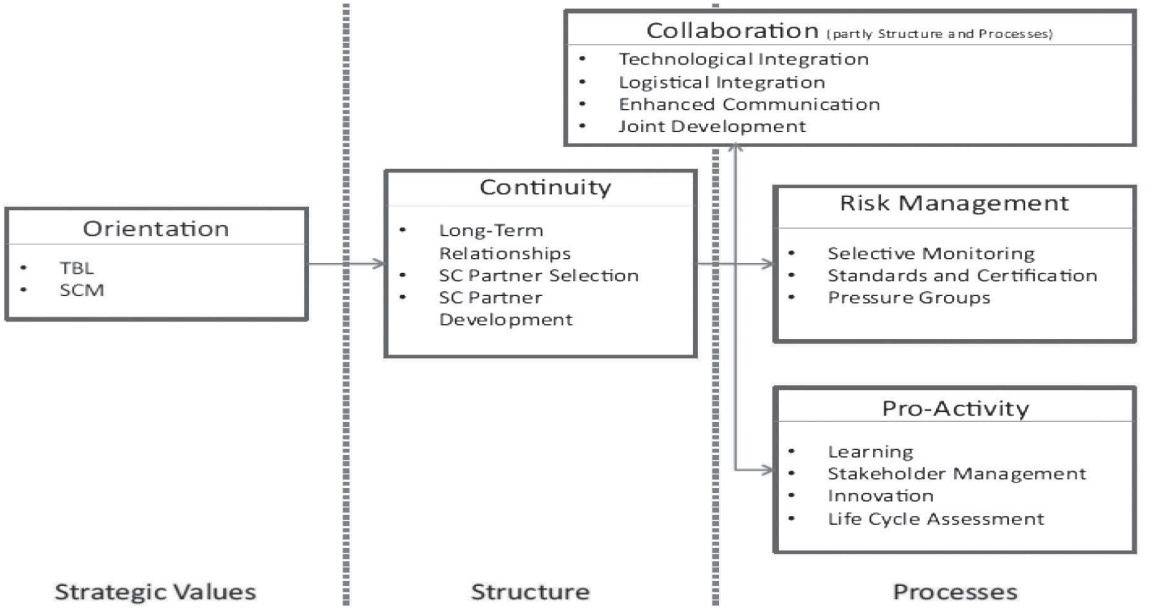

Figure 2: SSCM Practices & Categories adopted from Beske and Seuring (2014)

Underlying Themes in the Literature

We found many overlapping themes from the previous literature analysis and review of frameworks. We also found that sustainability literature of the supply chain has mainly focused on providing suggestions & improvements to better collaborate with suppliers to gain advantages in SSCM. Literature also suggests that organizational commitment is necessary for effective supply change management. The firms should adopt the following to implement SSCM in any supply chain's upstream flow successfully. (i) Setting Criteria for supplier selection (Minimum requirements being social and environmental standards) (Seuring & Muller, 2008), (ii) Communication with the supplier (communicating selection criteria and operational standards, enhanced communication with supplier) (Seuring & Muller, 2008), (iii) SSC management (Managing supplier, Certification, supplier training, and development), (Schaltegger & Burritt, 2014), (iv) SSC measurement (Supplier Audit, KPI's for measuring performance, evaluating supplier progress) (Schaltegger & Burritt, 2014), (v) Collaboration with Supplier (developing communication channel, logistical and technical integration)(Beske & Seuring, 2014), and (vi) Risk Management (Standards & certifications, monitoring, risk assessment, backup & multiple suppliers) (Beske & Seuring, 2014). A pictorial presentation of the said factors is depicted in Figure 3. Firms can use this framework to evaluate SSCM management upstream of an organization:

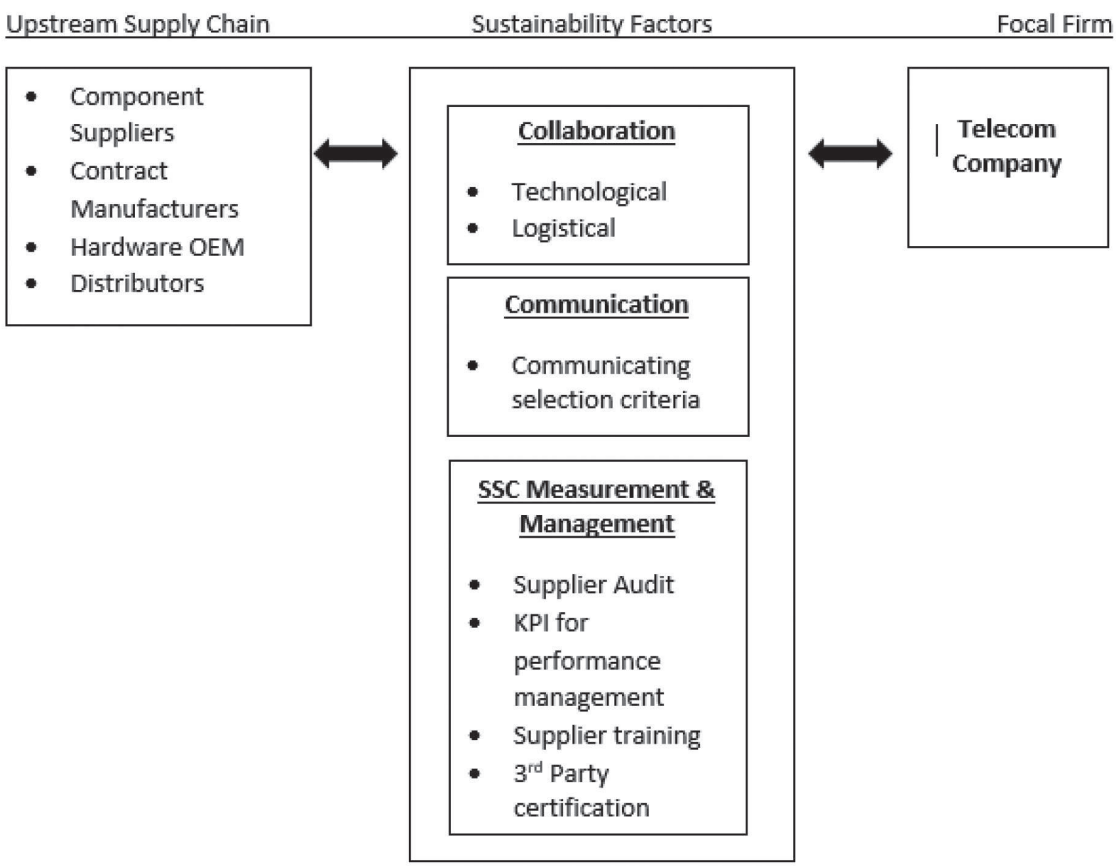

Figure 3: Initial Framework for Upstream Sustainable Supply Chain Management In The Telecom Sector

Strategic Framework

All the above-discussed frameworks are adapted from the literature. Ashby (2012) asserts a need to develop a practical strategic framework rather than a conceptual framework to improve SSCM in an industry. A strategic framework (Clearpath, 2016) is different from a conceptual framework as it provides a pictorial view of an organization's strategy. It also includes drives of accomplishment (both internal & external), lists objectives & resources, and highlights prospects to power assets. It is essential to differentiate the nature and functions of a strategic framework from a conceptual framework.

Methodology

Yin (2015) believes that research methodology is essential as it brings a "Methodicness" to research by placing specific research procedures to follow, avoiding carelessness,

and bringing depth in research, while improving credibility and removing any biases, especially in the case of qualitative research (Yin, 2015).

Overview of the case study

The selected company for the case study falls within the telecom sector. The selected organization for the case study is a well-known telecom company. We are studying it to develop a sustainable telecom supply chain that focuses on all three sustainability criteria: economic, environmental, and social. The focal form is well known globally and locally. A few statistics about it are presented below:

- Provider of telecom services in 13 markets internationally
- The second-largest network in Pakistan
- Operating in Pakistan since 2005
- Has invested at least 2.3 billion USD in the country

The research observes the phenomena at the supply chain level. Respondents for the study include company personnel (directors, managers, and assistant managers) responsible for sustainable SCM and the company's development. We also collected data from the upstream suppliers of the organization. We collected the data based on interviews. The research approach is qualitative as the researcher is studying a social phenomenon in real-world situations while describing the view of participants to the phenomenon within a specific environment and context while using multiple sources for data collection (Yin, 2015). We have used a case study research design for our study. This research approach is contemporary, and the researchers have no level of control over its occurrence (Yin, 2013). The case study followed the protocol for data reliability (Yin, 2013). Below is a summary of the case study protocol.

Table 2: Case Study Protocol	
Research Question	What is the strategic framework to assess and achieve sustainability in the telecom industry?
Unit of Analysis	We focused on SC personnel and sustainability enablers in the focal firm, an established business entity in Pakistan's telecom sector.
Organization	
Timeline	
Data source	Data collected from Observations, Documentations & Interviews
Examples of key issues	1. What is the focal firm's stance/ level of effort in achieving SSCM?
	2. The overall strategy of supply chain sustainability efforts?
	3. Level of collaboration with supplier on sustainability initiatives
	4. Measurement & Management of SSCM
	5. Communication sustainability initiative to stakeholders in upstream and central parts of supply chain

Data Collection

Researchers can use up to six methods in qualitative research (Levitt, 2001). We have triangulated the data for this study by adopting the following three methods.

Observation

Yin (2013) states that observing the environment and behaviors of the interviewee are important aspects of qualitative analysis. In this study, we have observed the attitude and behavior of the respondents while administering the questionnaire.

Documentations

Apart from using interviews, the study also utilizes data collected from company documents. The documents we tabbed are local and international sustainability reports of the groups

1. Semi-Structured Interviews:

The interview structure used in this study is a mixture of in-depth and semi-structured interviews. This method allows researchers to ask questions related to the research objectives (Saunders, Lewis, Thornhill & Wilson, 2009). The semi- semi-structured interview for this study had ten questions and another ten follow-up questions.

The questions we used in the study were related to sustainable supply management practices and strategies that the focal firm uses to make its supply chain more sustainable.

Before the interview, we gave the interviewee an interview guide and the questionnaire.

Table 3: Data Collection Method Summary

Interviews	Documents	Observation
• Format: Semi-Structured	• Sustainability report for the year of 2014 for Pakistan	• 1st visit for Interview
• Participants: 10	• Sustainability report of the year 2015 for the whole group	• 2nd visit for follow-up questions and meeting each participant to discuss and get their interview summaries/findings approved
• Questions: 10		• Visit the company's website
• Follow up questions: 10		
• Duration: 30-45 mins (each interview)		
• Participants selection: via purposive sampling		

Case Validity and Reliability

We followed all the protocols necessary for the case study, including reliability and validity analysis. The authors initially reviewed the interview guide for the interviewee. Subsequently, two senior faculty from academia and three experts of the corporate world vetted the document. In Table 4, we have presented the process for ascertaining the reliability and validity analysis as advised by Yin (2013; Vin, 2015).

Table 4: Case Validity and Reliability Summary

Aspect	Addressing aspects in this study
Construct Validity	– Before the interview, we gave the interviewees an interview guide and questionnaire. – Initially, we asked ten questions, followed by another ten questions. – Interviewees reviewed all the questions and interview summaries. They did not find any inconsistency or errors in the measures of the defined concept. – We then built the summaries of the answered questions and aligned them with the initial framework. – The authors compared the interview summaries with the company's sustainability reports website and based on-site observations – We then developed a comprehensive interpretation of each construct (in section findings), which we discussed and obtained the consensus of the interviewees.
Internal validity	– After the literature review, the study developed the initial conceptual framework (Figure.3). – As identified by the study, all constructs in the conceptual are supported and valid measures of SSCM.
External validity	– The study based on the Stakeholder Theory investigated the phenomena from the stakeholders' perspective. – The stakeholder can apply the developed strategic framework in the focal firm—other telecom firms and firms in other domains can adapt developed SSCM.
Reliability:	– We followed the case study protocols and remained focused on the articulated questions.
	– As such research method is precise and reiterate-able

Results

The proposed framework for the case study explains the sustainable supply chain efforts that firms use with their partners, specifically in collaborating with suppliers, communication with suppliers, and measurement and management of sustainable supply chain. We have summarized the results based on interviews, observations, and company reports.

Collaborating with Supplier

We found that the focal firm's collaboration with its supplier is conventional. The firm collaborates with established and reputable suppliers. Apart from focusing on suppliers' social and environmental practices, the focal firm also pays attention to suppliers' financial capacity. Due to the size of the focal firm, it is in a bargaining position while dealing with the suppliers. The focal firm focuses on its core competencies and

outsource other business processes to others. Consequently, it results in efficiency and decreased costs. The focal firms also make arrangements with their suppliers to allow their employees to work on its premises.

Communication with Supplier

Firms communicate with suppliers in two stages. One is pre-selection communication, and the other is post-selection communication. In the pre-selection stage, firms focus on selection criteria and suppliers' orientation and practices on sustainability. In post communications, firms focus on the following elements.

1. To enhance the communication with suppliers.
2. To provide feedback to suppliers.

While partnering with new suppliers, firms ensure that the potential suppliers' values globally accepted environmental, health, and safety regulations. Subsequently, firms sign a legal contract with the suppliers that also code of conduct. The contract generally has a provision that allows firms to penalize the suppliers for violating the agreed code of conduct. The firm enhances communication with the local supplier through meetings, telephonic calls, and emails. With international partners, firms mainly use emails and telephonic calls for communication. The company also measures the performance of its suppliers. In the case of outsourced call centers, firms frequently measure their performance. For technical business processes, firms measure the suppliers' performance less frequently. Firms bi-annually give feedback to the suppliers and suggestions to improve the performance. However, in the case of very poor performance, the firms may increase the frequency of feedback and suggestions.

Measuring & Managing SSCM of Suppliers

For measuring and managing the SSCM of suppliers, firms use different tools, including the following:

1. Using KPIs,
2. Auditing suppliers,
3. Monitoring and evaluating supplier performance,
4. Risk assessment,
5. Supplier training
6. Third-party certifications.

To get the desired results company provides training to the call center representatives. The firms also rely on the third-party audit report of suppliers. Such audits have more

transparency. Firms also rely on supply-chain and inventory audits for smooth operation. The frequency of such audits is four times a year. Firms also assess the performance of the suppliers based on KPI standards. The firm expects its vendors to be certified and has developed a supply chain that is environmentally friendly and in line with ISO 14001 standards. To assess the working conditions of the supplier, the focal firm representatives visit the site to measure the ecological, safety, and health conditions of the supplier. Another method to reduce costs in the long run and have a positive image in the market is to make SC more sustainable. This discussed method is in line with the Stakeholder Theory (Freeman, 2010). Consumers' concerns about environmental products have increased significantly, and they expect all the members of the supply chain to use environment-friendly products.

The dimension along which a supply chain can be made sustainable are; environmental, social, and economic (Carter & Rogers, 2008). To ensure sustainable management of the supply chain, the focal firm ensures that all the supply chain members value and practice sustainability (Seuring & Muller, 2008).

Case Findings & Discussion

In the light of the results above, below in section one is the evaluation of focal firms' SSCM practices and stance on sustainability initiatives. Similarly, section two contains a modified strategic framework developed in light of results, case findings, and discussions that telecom firms can use to achieve sustainability in their supply chain.

Evaluation of Focal Firms SSCM Practice and Stance

The current sustainable supply mechanism of the focal firm is pretty ordinary and conventional. The focal-firm attitude towards SSCM is reactive but not proactive. A few pertinent issues are discussed below:

1. The focal firm signs a contract with the suppliers. It has clauses related to the code and conduct of doing business. In case the supplier violates the terms and conditions, the focal firm can penalize suppliers.
2. Although focal firms give importance to supplier social and environmental practices, it gives more weightage to the financial soundness while awarding contracts to the suppliers.
3. The company only gives basic training to suppliers to achieve desired service level. It does not make investments in vendors to improve the quality of the products and services.
4. Communication with suppliers is also pretty ordinary and conventional, limited to

communication via telephonic calls, emails, and in-person communication.
5. The focal firm gives feedback and suggestions to the suppliers when their performance is too poor.
6. When sharing project information, the focal firm only shares limited information. It inhibits suppliers from delivering what the project demands.
7. The quantum of the Investment for developing suppliers is insufficient, unlike Honda, which spends considerable resources on its vendors and suppliers.
8. Collaboration only exists in outsourcing functions such as call centers and bill delivery; otherwise, there is no robust technological or logistical collaboration.
9. Also, while the firm uses KPIs, they are mostly limited to specific business functions, not sustainability initiatives.

Revised Strategic Framework for a Focal Firm to Achieve SSCM

From all the above discussions, we have inferred that the focal firm has taken a few initiatives for SSCM. We suggest the focal firm should deviate from conventional supply chain practices and adopt sustainable supply management practices. Based on the discussed practices and attitudes of the focal firm, we suggest it must develop a road map to increase the effectiveness of SSCM. A strategic road map contains action, efforts, and strategies for achieving sustainable strategic goals (Clearpath, 2016).

Below is a strategic framework that the focal firm or any company in the telecom sector can use to evaluate its current standing in SSCM and improve accordingly. This framework has the following elements.

1. Highlights what steps a firm can take to make upstream more sustainable.
2. Divide the activities into different stages and pursue them step by step to achieve SSCM in the upstream supply chain.
3. Identify best practices on SSCM that can help leverage assets and give a competitive advantage.

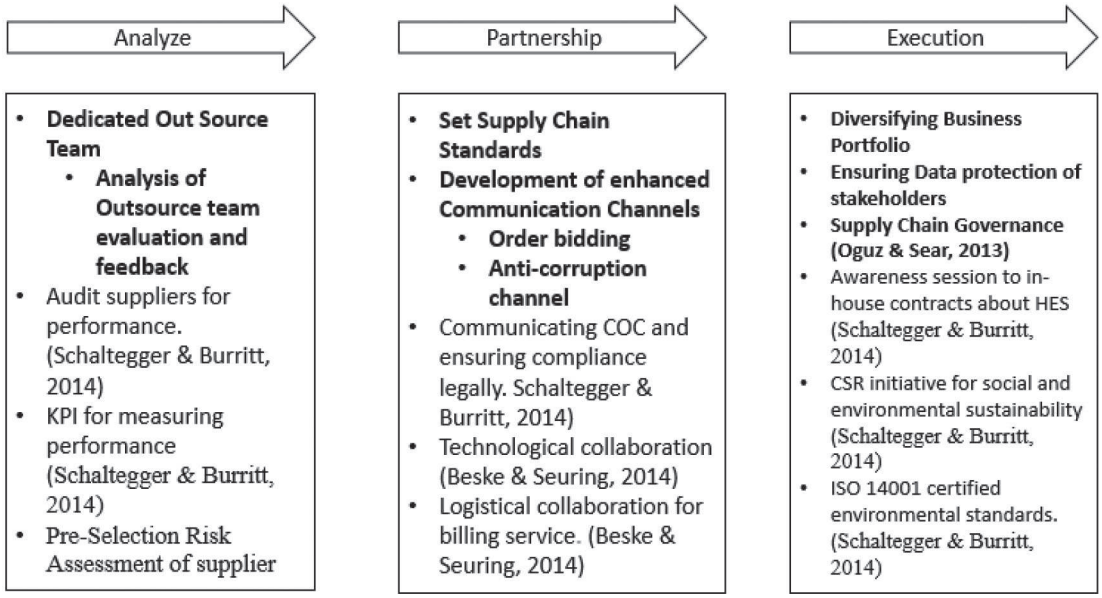

Figure 4: Strategic Framework for the Focal Firm

This case study is grounded in the Stakeholder Theory. The findings are generalizable as other researchers have extended the stakeholder theory, which is widely accepted.

Conclusion and Implications

This paper has developed a framework that managers can use to assess the current challenges that the company faces in achieving sustainable SCM. The company should assess its stance towards sustainability initiatives and what steps it can take to make SC more sustainable. The authors recommend that the managers use the framework in the supply chain department of telecom companies to evaluate where they stand and what they want to achieve. The self-evaluation is a driving force for improving the companies' supply chain by introducing more sustainability initiatives in the supply chain with their suppliers' help. Similarly, we believe that the developed framework will positively contribute to sustainability literature by providing a platform for future research that will lead to similar research that can improve the final framework and make significant improvements.

Limitations and Future Studies

The study focuses solely on the upstream of the telecom SC rather than the complete supply chain. The case study focuses on a single organization within the industry and its supplier. Since the following is a case study that studies an organization within a specific context, results might not generalize to other industries. However, the study

achieved analytical generalizability, and results for other companies in the industry are likely to be similar. Future research could include the complete supply chain of the telecom industry rather than just the upstream supply chain. Multiple case studies can be conducted to further contribute to the topic and test the findings of the current case study. This approach will also provide a more comprehensive view of the industry. Also, the researcher can explore how firms can assess and mitigate risk when partnering with suppliers. Future studies should research different strategies to collaborate with their stakeholders, not only with suppliers but also with other stakeholders for the sustainable supply chain.

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Market Forces
College of Management Sciences

Volume 17, Issue 1, June 2022
https://doi.org/10.51153/mf.v7i1.518

Analyzing Various Channels of Monetary policy Transmission Mechanism: The Case of Pakistan

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Abstract

This paper measures the impact of the interest rate, credit, and risk channel on the monetary policy of Pakistan, based on a data set from 1995 to 2020. It also examines the long-run and the short-run relationship between foreign debt, bank capital, and monetary policy transmission mechanisms by using the Autoregressive Distributed Lag (ARDL) model. The results suggest that the risk channel does not follow the cointegration benchmark. We found an insignificant association between the independent and dependent variables, suggesting no long-term relationship between the model's variables. The interest rate coefficient is negative, but its relationship with the dependent variable is significant. Similarly, the credit channel's coefficient is negative, but its association with the dependent variable is statistically significant at the 90% confidence level. The research also suggests that the risk channel has a short-term association. At the same time, interest rates and credit channels have short-term and long-term relationships.

Introduction

An important and contentious question in macroeconomics is whether the monetary policy (MP) affects the real economy or not? It is difficult for policymakers

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to implement monetary policies as many variables are beyond their control. Therefore, the researchers investigate the factors that affect the monetary policy transmission mechanism. Researchers on how monetary policies affect economic activities in developing countries have diverse opinions. Many researchers believe that monetary policy significantly affects economic activities, while others believe it is unsuccessful to generate real economic activities as they assert that money and output have an insignificant association (Idris, 2019; Donkor et al., 2021). Given these conflicting and diverse perceptions, many researchers have given their opinions from different perspectives (Bernanke & Gertler, 1995; Zgambo & Chileshe, 2014).

Monetary policy helps to expand or contract the money supply. Researchers argue that the monetary transmission goal in the long term should stabilize currency supply and output without adversely affecting economic growth (Fabris, 2018). Auclert, Dobbie, and Goldsmith-Pinkham (2019) assert monetary policy helps in achieving a stable, balanced effect on GDP, investment, saving, export, production, and employment. A deficiency in aggregate demand for goods and services can promote unemployment. At the same time, a surplus demand stimulates inflation (Acharya et al., 2020). Literature suggests eight direct and four indirect channels affect the monetary policy transmission mechanism (MPTM). The direct channels are "the credit, exchange rate, asset price, and interest rate channels" (Adekunle et al., 2018; Igharo et al., 2020). We found a paucity of research on external debt despite the extensive research. Monetary policy is an important tool for price stability. People will not hedge their resources but use them more efficiently when prices do not fluctuate. The lower inflation risk premium will decrease the interest rate, allowing depositors to invest instead of saving (Alani, 2021). It can also help minimize unanticipated inflation, stabilizing the political and economic environment as monetary policy considers a single and exceptional tool for price stability(Viphindrartin, Saleh & Prestianawati, 2020). This paper investigates the long-run and short-run relation between the risk channel and monetary policy transmission mechanism (MPTM). It also explores the long-run and short-run relation between interest rate channels and monetary policy transmission mechanisms. Finally, it examines the long-run and short-run relation between credit channels and MPTM. After investigating the long-run and short-run relation between the risk channel credit channel and interest rate channel of MPTM, it will help the policymakers develop better policies for the economy and manage the money supply. This study can also benefit the banks to utilize their resources efficiently.

Literature Review

The economics literature has conflicting views on the monetary policy transmission mechanism (MPTM) (Zahid et al., 2021; Nkikabahizi, Hategekimana & Musabanganji,

2020). Consequently, several studies have analyzed foreign debt with various econometric techniques on panel, cross-sectional, and time-series data (Igharo et al., 2020). This research aims to recognize the relationship of MPTM with the other channel that remained unexplored and shed light on external debt on monetary policy transmission. The question is whether monetary policy shocks affect macroeconomic aggregates or not. Researchers have answered this question from different perspectives, but many researchers believe there is a need for more studies examining its effect on particular sectors or the whole economy.

In a study, Bader and Magableh (2009) examined the determinants of public debt in Jordon. The study used a data set from 1980 to 2004 and used the Johansen cointegration test for analysis. The study found that foreign aid, government budget deficit, and the saving gap affect the external debt, but the exchange rate has the most effect on external debts. Atique and Malik (2012) also studied the effects of liability on economic growth from 1980 to 2010 in Pakistan and used the ordinary least squares (OLS) approach. The result shows that external debt slows down economic growth.

Many past studies have examined the impact of monetary policy transmission mechanisms (MPTM). For example, Adler et al. (2015) investigated whether monetary policy influences central bank capital. The study used central bank financial strength as a dependent variable. The data set in the study was from 2002 to 2010. The study found that policymakers can use central bank capital in interest rate policy decision-making based on a linear model. Atique and Malik (2012) studied the effect of liability on economic growth in Pakistan with a dataset from 1980 to 2010. The study found that external debt adversely affects economic growth. Abbas et al. (2019), in a study on emerging economies on a data set of six years from Pakistan, found that excess capital is good for an economy. This association is more relevant to low assets countries since high asset countries have other options to generate income.

Also, Era and Holger (2006) investigated the transmission mechanism of MP in America to determine the MP's ability to impact economic activity. The researchers found that monetary policy can be affected by three main channels: the interest rate channel, asset channel, and exchange rate channel. This paper concluded that the interest rate is strongly affected by the interest rate channel in developing and transition economies with a high degree. Furthermore, Agha et al. (2005) analyzed the channels of MPTM in Pakistan from July 1996-January 2004. The study employed a time series method to analyze the "credit channel, asset price channel, exchange rate channel, and interest rate channel". The study concluded that monetary contraction decreases the demand for goods and services. In essence, banks cater to investment demand. As a result, it

decreases the price pressure and reduces the economy's price level. However, banks play an influential role in the interest rate, asset price, and MPTM. Yet, the study found that the exchange rate channel is less effective compared to the other channels.

Moreover, Borio, Gambacorta, and Hofmann (2017) observe the consequence of bank capital in the Italian bank lending channel by capital to asset ratio of 1992-2001. Based on the panel regression analysis, the study found that bank lending channels affect bank capital channels. Aleem (2010), based on data from 1998 to 2007, examined the MPTM. The study used lending, asset pricing, and exchange rate channels as independent variables. The study found that bank loans had a significant influence on the MPTM. Ishioro (2013) investigated the relationship between macroeconomic aggregates and some channels from 2005 to 2012. Using the Granger causality test, the study found that only three channels (i.e., interest rate, exchange rate, and credit channels) contribute significantly to Nigeria's inflation.

At the same time, Arfin (2017) analyzed Bangladesh's MPTM, specifically through the lending and exchange rate channel from 2003 to 2013. The paper found that the monetary aggregate background affects the price level in Bangladesh. Also, the bank lending channel helps implement monetary policy in the economy. However, the exchange rate channel had the highest interference in the transmission process. This paper applied Structural Vector Autoregression to investigate the periodic data gathered on 8-variables. After reviewing all the above-discussed literature, we believe studies are abundant on the MP relationship with economic growth, the effectiveness of the MP, and the channels of the MP transmission mechanism in Pakistan. However, we found a limited number of studies on the debt channels.

Methodology and Data Collection

This research aims to examine the long-run and the short-run relationship between the risk channel, credit channel, and interest rate channel of MPTM. This paper also helps analyze the association between macroeconomic developments and monetary policy, which is the MP dependence on economic variables and vice versa (Agha et al., 2005). We used the data from 1995 to 2020 to examine the various channels of MPTM. Previously many past studies have explored the channels of MPTM (Rashid & Shah, 2019). However, many studies have explored the relationships between the risk channel, credit channel, and interest rate channel collectively (Uchendu, 1994; Chiminea & Nicolaidou, 2015). Numerous empirical researches found the exchange rate as a significant variable. Several studies have used gross domestic product (GDP) as a variable in the risk channel (Orzechowski 2016; Chiminya & Nicolaidou, 2015). Many researchers believe that the inflation rate significantly affects external debt channels (Onafowora & Owoye, 2019;

Omodero, 2019; Guei, 2019). The study has used the following variables presented in Table 1.

Table 1: Variables

Variable	Frequency	Source
Risk Channels		
External Debt Channel	Yearly	State Bank of Pakistan
Exchange Rate	Yearly	State Bank of Pakistan
Gross Domestic Product	Yearly	State Bank of Pakistan
Inflation	Yearly	State Bank of Pakistan
Interest Rate	Yearly	State Bank of Pakistan
Interest Rate Channels		
Treasury Bills Six Month	Yearly	State Bank of Pakistan
Consumer Price Index	Yearly	State Bank of Pakistan
Karachi Stock Exchange-100 Index	Yearly	State Bank of Pakistan
Loan	Yearly	State Bank of Pakistan
Real Effective Exchange Rate	Yearly	State Bank of Pakistan
Whole Sale Price	Yearly	State Bank of Pakistan
Credit Channels		
Loan	Yearly	State Bank of Pakistan
Treasury Bills Six Months	Yearly	State Bank of Pakistan
Consumer Price Index	Yearly	State Bank of Pakistan
Whole Sale Price Index	Yearly	State Bank of Pakistan

Variables

The Risk Channel

The factors that motivate a country to borrow money may promote a sustainable external debt solution. This study has focused on several models (Adelman & Chenery, 1966; Taylor, 1996). From these models, we have derived (i) sources of debt accumulation which is the external exchange gap, (ii) the saving-investment gap, and the (iii) the fiscal-constraint gap, which is very important for a country like Pakistan. Empirically we also identified other variables related to the channel of external debt. The study has used the following framework for analyzing the risk channel in Pakistan:

$$ED = f(GDP, INF, EX, INT)$$

Where ED = External Debt, GDP = Gross domestic product, INF = Inflation rate, EX= Exchange Rate, INT= Interest rate

$$ED \downarrow => GDP \uparrow => INF \downarrow EX \downarrow INT \downarrow => Y \uparrow$$

ED shows external debt. If it decreases, it can increase the gross domestic product, leading to a decrease in inflation, positively affecting investment spending. It will also reduce the exchange and inflation rates. Therefore, the risk channel equally applies to consumer spending as consumers' investment decisions include durable expenditure and housing. The risk channel contains the following variables. For the variables, we have applied the Logarithm form. The empirical estimating model of the study follows;

$$lED_t = \alpha + \beta lGDP_t + \beta lInf_t + \beta lEx_t + \beta lInt_t + \mu_t$$

lED = Log of External Debt, lGDP= Log of Gross domestic product, lInt = Log of interest rate, lEx = Log of Exchange Rate, lInf = Log of Inflation rate and μ_t= error term.

The Credit Channel

Several factors associated with the credit channels affect the interest rates. Thus, banks play a significant role in stimulating broad monetary aggregates. Mishkin (1995) asserts when a monetary policy focuses on reducing the money supply, the banks' reserves also decrease, due to which consumers' borrowing is also reduced. Mathematically, this is presented in the following equation:

$$M \downarrow => \ bank\ deposits \downarrow => \ bank\ loans \downarrow => \ I \downarrow => \ Y \downarrow$$

Consequently, the quantum of bank loans decreases, and investment also declines, negatively affecting the output, promoting reduced investment, reduced spending, and low aggregate demand. The credit channel contains the following variables:

Loan: "Private sector credit, WPI: wholesale price Index, CPI: Consumer Price Index, TB6: 6-month Treasury Bill Rates, REER: real effective exchange rate data, KSE100: Karachi stock exchange 100 indexes." Therefore, the following equation was estimated:

$$lLOAN_t = \ \alpha + \beta_1 lCPI_t + \beta_2 lWPI_t + \beta_3 lTB6_t + \mu_t$$

The Interest Rate Channel

Interest rate is a key channel for the MPTM as its affects the economy. We have aligned the interest rate channel with the Keynesian standard. Keynes 1936 studied the IS-LM framework (Hicks, 1980), which several authors extended in their studies, including Taylor (1995) and Mishkin (1995). This schematic diagram represents the monetary policy tightening effect on the economy.

$$M \downarrow => \ i \uparrow => \ I \downarrow => Y \uparrow$$

The interest rate channel contains the following variables. M in the equation shows that the contraction in monetary policy can increase the interest rates, leading to rising capital costs and negatively affecting investment spending. These higher interest rate decisions result in a fall in business stock and residential accommodation. It will also lead to a fall in aggregate demand and a decline in yield. Therefore, the interest rate channel equally applies to consumer spending and investment decisions related to durable goods and housing.

Prices: "Consumer Price Index (CPI) the inflation rate, TB6: 6-month Treasury Bill Rates, Loans: Private Sector Credit, REER: Real Effective Exchange Rate, KSE100: Karachi Stock Exchange (KSE-100) Index, WPI: wholesale price Index." Therefore, the following equation was estimated:

$$lTB6_t = \alpha + \beta_1 lCPI_t + \beta_2 lWPI_t + \beta_3 lLOAN_t + \beta_4 lREER_t + \beta_5 lKSE100_t + \mu_t$$

Data Analysis

We have used the time-series data from FY1995 to FY2020 to forecast Pakistan's monetary policy transmission mechanism by considering its components. Additionally, we tested the short-term and long-term relationships using the ARDL model. A precondition for this model is that the variables should be stationary at the level and 1st difference. We employed the Dickey and Fuller (1979) test to investigate unit roots in the data series to test this precondition.

Augmented Dickey-Fuller test

To identify the stationarity of the data series, we have used various types of unit root tests. It is necessary for sophisticated and higher econometric modeling. For this purpose, we have used the most popular and widely used unit root test, i.e. the Augmented Dickey-Fuller test. The generated equation for it is as follows:

$$\Delta yt = \alpha_0 + \alpha_1 y_{t-1} + \sum_{i=1}^{n} \alpha \Delta y_t + e_t \quad \text{Eq (1)}$$

As mentioned in equation 1, 'y' represents the time series, t is the period, α0 is a constant, n is the optimum number of lags, and 'e' is an error term.

ARDL

Before applying the ARDL model, we have tested the integration level of all the variables. Therefore, if any variable needs to be 2nd differenced, then ARDL won't be applicable. We applied the ARDL model, avoiding all the other limitations (Pesaran, Shin & Smith, 1996). Pesaran, Shin and Smith (1996) introduced this approach which

gained worldwide acceptance. This approach is best when the variables are at level, 1st difference, or even fractionally integrated. The small sample size provides a super consistent estimate of long-run coefficients and robust cointegration results.

$$\Delta In(MF_t) = \beta_0 \sum_{i=1}^{q} \beta_u \Delta In(MF_{t-i}) + \sum_{i=0}^{q} \beta_{2i} \Delta In(TFP_{t-i}) + \sum_{i=0}^{q} \beta_{3i} \Delta In(PI_{t-i}) + \sum_{i=0}^{q} \beta_{4i} \Delta In(TO_{t-i}) + \beta_5 In(MF_{t-1}) + \beta_6 In(TFP_{t-1}) + \beta_7 In(PI_{t-1}) + \beta_8 In(TO_{t-1}) + U_t$$

To identify the long run and the short relationship between variables, we used the ARDL model, which includes the Bound test of the equation using the F-statistic with lower bound and upper bound. For the null hypothesis, we assumed "no cointegration between variables."

Empirical Analysis

The ARDL model prerequisite is that the time series is stationary. Therefore, we identified the order of integrating variables involved in the model at level or 1st difference. We used this method to get the long-run or short-run relationship in the ARDL model. The ARDL model is preferable for a small sample size.

Stationarity and Unit Root Test Result

In this exercise, the first step is to identify the integration of the data. For this, we transformed the data set into a simple graph to see data integration. Subsequently, we developed a unique graph called correlogram, followed by the ADF unit root test.

ADF Unit Root Tests

Table 3 depicts the summary of the ADF test.

Table 3: ADF Test Results

Variables	At Level		At First Difference	
	ADF Stats	P-value	ADF Stats	P-value
Risk Channel				
LED	-4.9097	0.0006		
LEX	-2.7282	0.0853	-11.2750	0.0000
LGDP	-2.5910	0.1085	-5.3495	0.0003
INF	-2.0731	0.2563	-4.8829	0.0008

LINT	-3.7823	0.0090		
Interest Rate Channel				
LTB6	-4.7248	0.0011		
LCPI	-2.0731	0.2563	-4.8829	0.0008
LKSE100	-3.8051	0.0106		
LLOAN	-2.6482	0.0983	-4.6032	0.0014
FREE	-2.7282	0.0853	-11.2754	0.0000
LWPI	-3.9215	0.0075		
Credit Channel				
LLOAN	-2.6482	0.0983	-4.6032	0.0014
LTB6	-4.7248	0.0011		
LCPI	-2.0731	0.2563	-4.8829	0.0008
LWPI	-3.9215	0.0075		

Results

The risk, channel & LINT are stationary if the probability is lower than 0.05. Hence, we rejected the null hypothesis, suggesting the "LEX, LGDP, and LINF are stationary at 1st difference." Moreover, in the interest rate channel, "LTB6, LKSE100, and LWPI are stationary at level ($p<.05$). Therefore, we rejected the null hypothesis, suggesting LCPI and LLOAN are stationary at the 1st difference. Also, in the credit channel LTB6 and LWPI are stationary ($p<.05$). Therefore, we rejected the null hypothesis, suggesting LLOAN and LCPI are stationary at the 1st difference. In all three channels, all variables are stationary at the 1st difference and none at the 2nd difference.

Risk Channel

Bounds Test

Table 3a represents the F-statistics containing lag of second-order and having the value of the lower bound and upper bound, which is 2.86 and 4.01 respectively, at the 5% level. The F-test value is 3.15, which is between the lower bound and upper bound of F-statistics, which results in inconclusive results. Consequently, we found that there is no long-run relationship between the variables.

Table 3a: Bounds Test

Order of Lag	F-statistic
2	3.15

ARDL Co-integration Test

The optimum model selection method was the Akaike info criterion (AIC), and the maximum lag selection criteria were 2. Table 4a suggests it is not following the

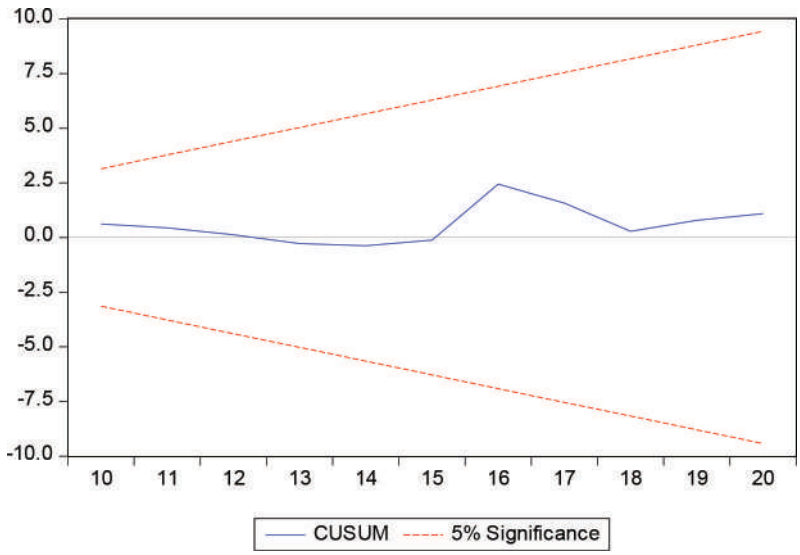
cointegration benchmark as the "coefficient is negative, but the probability is more significant than 0.05," which is statistically insignificant. Therefore, the model has "no long-run relationship between the variables."

Table 4a: ARDL Cointegration Model

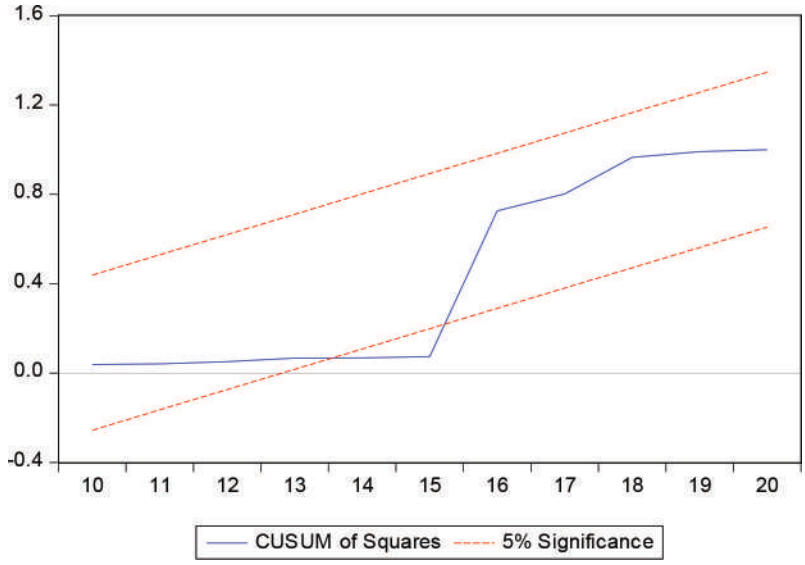
Dependent Variable: LED				
Variables	**Coefficient**	**Std. Error**	**t*Statistic**	**Probability**
D(LED(-1))	-0.3633	0.2593	-1.4012	0.1887
D(LINF)	0.7532	1.2325	0.6111	0.5536
D(LINF(-1))	-1.8979	1.2235	-1.5512	0.1491
D(LINT)	-0.2078	0.2677	-0.7762	0.4540
D(LEX)	0.0401	0.6741	0.0594	0.9537
D(LEX(-1))	-0.7709	0.7134	-1.0805	0.3030
D(LGDP)	-2.4677	2.1045	-1.1726	0.2657
D(LGDP(-1))	-3.9142	1.9949	-1.9621	0.0755
CointEq(-1)	-0.4086	0.2810	-1.4542	0.1738

Stability Tests

We carried out the stability test of ARDL based on an error correction model using CUSUM and CUSUM squared tests. Graphs 1a and 1b depict both the bounds at the 5% confidence levels. Both the models are stable, but Graph1b is unstable only for the period 2014 and 2015



Graph 1a: CUSUM Test



Graph 1b: CUSUM Squared Test

Interest Rate Channel

Bounds Test

Consequently, Table 3b represents the F-statistics of the second lag order and has the value of the lower bound and upper bound, which are 2.96 and 4.18 respectively, at the 5% level. The F-test value is 2.96, between the lower and upper bounds of F-statistics, suggesting no long-run relationship among variables.

Table 3b: Bounds Test

Order of Lag	F-statistic
2	2.96

A negative and significant value in the error correction term suggests cointegration exists in the long run. The correction factor suggests that a yearly 46% adjustment in the dependent variable will help achieve an equilibrium state.

ARDL Cointegration

We used the optimum model selection method and the Akaike info criterion (AIC) by using the maximum lag selection criteria of 2. Table 4b suggests a negative but significant effect in the benchmark of cointegration. Therefore, we have inferred a long-run relationship between variables for the model. The variables LCPI (-1), LKSE100(-1),

LWPI, and LWPI(-1) are statistically significant at level 0.0385, 0.0214, 0.0000 & 0.0597, respectively.

Table 4b: ARDL Cointegration Model

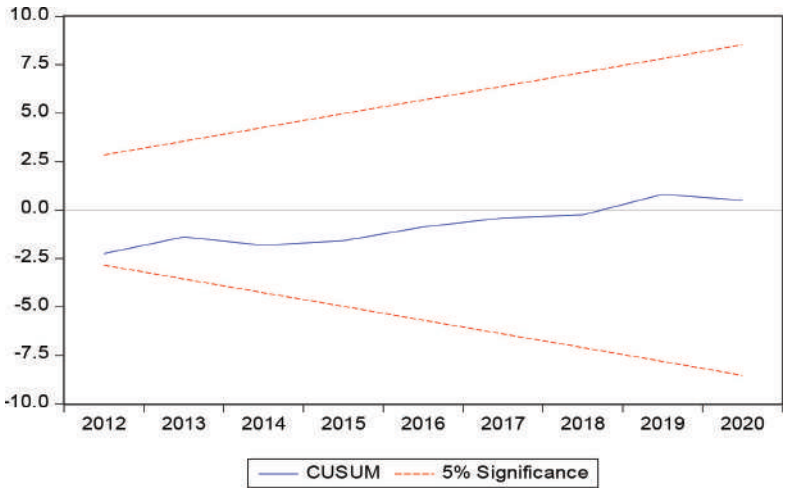
Dependent Variable: LTB6

Variables	Coefficient	Std. Error	t*Statistic	Probability
D(LCPI)	19.2775	13.2192	1.4583	0.1788
D(LCPI(-1))	19.9388	11.8363	1.6845	0.1264
D(LWPI)	-6.6314	6.9531	-0.9537	0.3651
D(LWPI(-1))	-11.8688	6.9683	-1.7033	0.1227
D(LLOAN)	2.3905	1.4676	1.6288	0.1378
D(LREER)	2.1507	2.9628	0.7259	0.4864
D(LREER(-1))	-6.4021	2.5417	-2.5189	0.0328
D(LKSE100)	-0.8440	0.6593	-1.2802	0.2325
D(LKSE100(-1))	1.7591	0.7487	2.3496	0.0433
CointEq(-1)	-0.7672	0.2582	-2.9713	0.0157

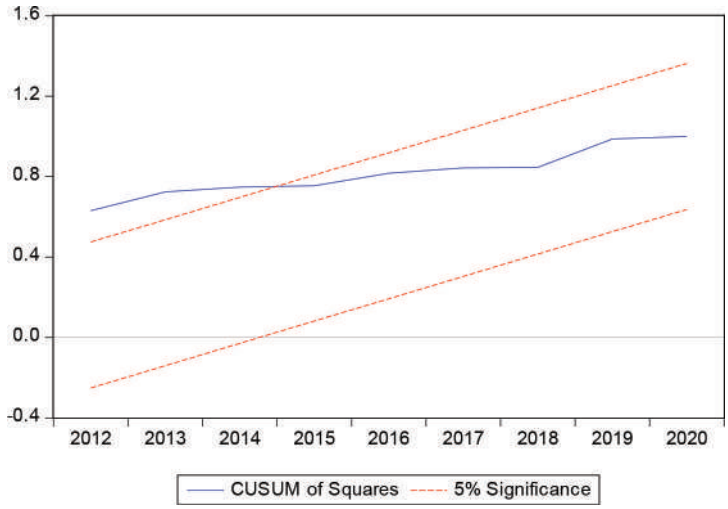
Cointeq = LTB6 - (-1.4219*LCPI + 0.5283*LWPI + 3.1158*LLOAN + 7.1774, *LREER -1.8660*LKSE100 -58.1416).

Stability Test

Results related to the stability tests based on the error correction model using the CUSUM and CUSUM squared tests are presented in Graphs 2a and 2b. The model in Graph 2a is stable. The overall model of Graph 2b is stable for all years except from 2012 to 2014.



Graph 2a: CUSUM Test



Graph 2b: CUSUM Squared Test

Credit Channel

The results related to the credit channel test are depicted in Table 4c.

Table 4c: Bounds Test

Order of Lag	F-statistic
2	3.55

The F-test value is 3.55, between the lower and upper bounds of F-statistics, suggesting no long-run relationship between the variables. Table 4d suggests the effect is negatively significant at a 90% confidence level. Therefore, there is a long-run relationship amongst variables for the model. However, the variables LLOAN (-1), LWPI (-1) and LCPI (-1) are statistically significant at level 0.0024, 0.0074 & 0.0481, respectively.

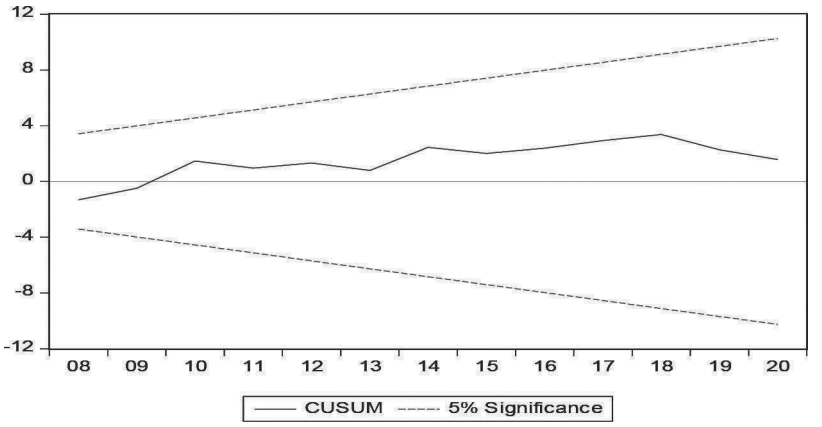
Table 4d: ARDL Cointegration Model

Dependent Variable: LLOAN				
Variables	**Coefficient**	**Std. Error**	**t-Statistic**	**Probability**
D(LLOAN(-1))	0.6375	0.1700	3.7495	0.0024
D(LWPI)	0.4779	0.4960	0.9635	0.3529
D(LWPI(-1))	-1.4193	0.4483	-3.1659	0.0074
D(LCPI)	0.7805	0.8536	0.9143	0.3772
D(LCPI(-1))	1.4695	0.6735	2.1820	0.0481
D(LTB6)	-0.0132	0.0176	-0.7465	0.4686
CointEq(-1)	-0.1377	0.0712	-1.9342	0.0752

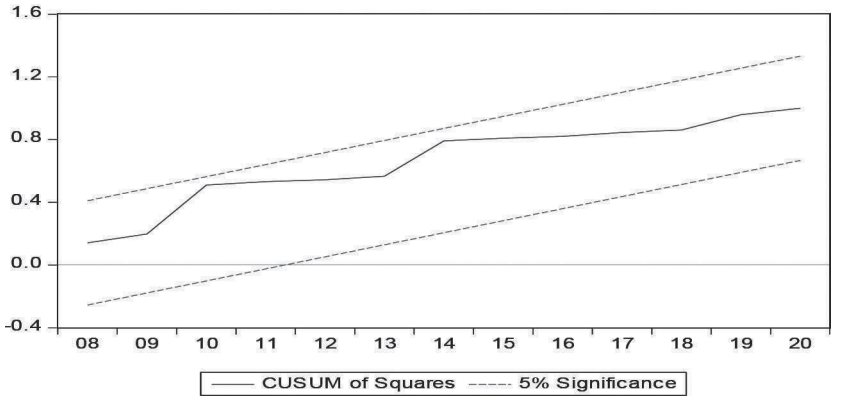
*Cointeq = LLOAN - (2.0093*LWPI -0.7240*LCPI -0.7125*LTB6 + 9.6375)*

Stability Tests

We carried out the stability tests using the CUSUM and CUSUM squared tests. Graphs 3a and 3b depict stable results at the 95% level.



Graph 3a: CUSUM Test



Graph 3b: CUSUM Squared Test

Conclusion

This paper aims to analyze the MPTM in Pakistan by considering these channels: The interest rate channel, credit channel, and the risk channel, as an innovative channel to measure its impact on the MPTM by covering the data from 1995 to 2020 in Pakistan. To fulfill the paper's aim, we examined the long-run & short-run relationship between foreign debt, interest rate, bank capital, and monetary policy transmission mechanism.

We have used the ARDL model, which has several advantages. The stated result

shows that the risk channel is stationary (p<.05). LEX, LGDP, and LINF are stationary at the 1st difference. In the interest rate channel LTB6, LKSE100 and LWPI are stationary. We found LCPI, and LLOAN are stationary at 1st difference. Also, in the credit channel LTB6 and LWPI are stationary. All the variables are stationary at 1st difference level and none at 2nd difference in all three channels. Subsequently, we used ARDL (Autoregressive Distributed Lag model) model. Table 4a of the risk channel shows the data does not follow the cointegration benchmark. The coefficient is negative (p>.05), suggesting no long-run relationship between the model variables.

Table 4b of the interest rate channel shows a negative coefficient, suggesting a long-run relationship between variables for the model. However, the variables LCPI(-1), LKSE100(-1), LWPI, and LWPI(-1) are statistically significant. Table 4c of the credit channel represents the cointegration benchmark. The coefficient is negative and statistically significant at 90%, suggesting a long-run relationship between the model variables. However, the variables LLOAN(-1), LWPI(-1), and LCPI(-1) are statistically significant. The results also show no long-run relationship in risk channel variables. Still, there is a long-run and short-run relationship between the interest rate and credit rate channels' variables.

Policy Recommendations

The paper has investigated the long-run and short-run relationship between the risk channel, interest rate channel, and credit channel of MPTM. Interest rate helps in stabilizing inflation. Besides interest rates, we recommend that the monetary authorities consider other options for controlling inflation. The credit channel of MPTM has a significant effect on monetary policy and the real economy. Apart from the credit, output significantly affects price shocks. The authorities can look to these aspects when forming the policy. Private sector investment is important for generating economic activities in an economy. Thus, the authorities may encourage private investors to invest in the productive sector. The country's monetary policy, apart from domestic variables, significantly depends on foreign variables. The international price of oil and dollar-rupee parity significantly affects macroeconomic variables such as "interest rate, exchange rate, inflation, and output," thus, the monetary policy must aim to reduce the deficits in the balance of payments. The policy must reduce the imports by finding alternative substitutes and decreasing the export of raw materials. Further, the export of value-added products by providing technical and financial assistance is encouraged.

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Market Forces
College of Management Sciences

Volume 17, Issue 1, June 2022
https://doi.org/10.51153/mf.v7i1.540

Take it on the Chin! Advertising Acceptance on Mobile Platforms - A Review of Literature

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Abstract

This study consolidates existing literature through a systematic review to develop a comprehensive conceptual framework. This study followed Pollock and Berge's (2018) six-stage systematic review methods to achieve the aims. We conducted a bibliometric and content analysis using 48 articles from six databases: Science Direct, Emerald Insight, Wiley online Library, Sage Pub, Springer Link, and Taylor & Francis. The content analysis discloses three major categories of the antecedent: advert attributes, personal factors, and environmental factors that affect mobile advertising value, attitude, and acceptance. We found the antecedents to mobile advertising acceptance are not the same for all. They vary across age groups, regions, advertising types, and cultures. The study concludes with theoretical implications and future research directions. The study identified some regions where more research on mobile advertising is needed. These consolidated findings are useful for advertisers in planning future mobile advertising campaigns.

Keywords: *Mobile advertising attitude, mobile advertising value, location-based advertising, permission-based advertising, app-based advertising, mobile platforms.*

Introduction

Nearly 3.8 billion people, 50% of the world, own a smartphone. There has been a 40% increase in smartphone ownership since 2016 (Turner, 2021). Because of this increased usage, mobile apps have attracted marketers' attention. Researchers expect

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mobile internet advertising to grow from $189 bn in 2019 to $247 by 2022. It is the highest spending compared to other media worldwide (Guttmann, 2021). Most of this advertising budget is allocated to the applications (Guttmann, 2022). Mobile apps fall into six categories: music, assistance, videos, information, games, and social media apps. A mobile advertisement is a form of digital advertising delivered through mobile phones (Baik et al., 2014). The concept of mobile advertising began with SMS advertising in 2001 (Barwise, 2001; Carroll et al., 2007; Muk, 2007). With the advent of smartphones in 2007, mobile advertising transformed into advertising through apps and notifications through the internet (Bidmon & Röttl, 2018; Graham et al., 2021; Sung & Cho, 2012). Over time, the promotion through multimedia messaging services (MMS) became a component of mobile advertising (Wong et al., 2015), along with the advertising through phone calls (Enwereuzor, 2017).

Mobile advertisements have serval benefits, including cost-effectiveness, real-time connection, and different engaging options. These factors have allowed mobile advertising to become an alternative viable communication medium (Wong et al., 2015). Frequent engagement with mobile advertising promotes brand-related cognition. Hence, it increases brand awareness and positive brand attitudes (Bidmon & Röttl, 2018). In addition, numerous academic studies have shown a considerable potential for mobile advertising (Wang & Genç, 2019). Mobile advertising acceptance is the readiness of mobile users to receive advertisements (Hanley & Becker, 2009). It is one of the most serious issues for the marketer since consumers have negative attitudes towtowardbile advertising (Gao & Zang, 2016).

It has been a challenge for marketers to improve advertising acceptance among mobile users because of scams, the novelty of the advertising model, and the acceptance of mobile technology (Gao & Zang, 2016). The existing body of literature indicates that mobile advertising acceptance influences numerous marketing areas: brand awareness (Bidmon & Röttl, 2018), behavioral intention (Shih & Schau, 2011; Wang et al., 2009; Wong et al., 2015), purchase intention (Kurtz et al., 2021). Over the last decade, there has been a major increase in research on the reception of smartphone ads (Ashari Nasution et al., 2021).The literature is now rich on mobile advertising acceptance. Many studies found different factors that can lead to mobile advertising acceptance or rejection(Liu et al., 2019; Nwagwu & Famiyesin, 2016; Parreño et al., 2013). The studies on mobile advertising acceptance have utilized various methods, including qualitative (Bakare et al., 2017; Wong et al., 2015), qualitative and mixed methods (Muk, 2007). Although these studies have explored a broad range of concepts, techniques, and contexts, they have not focused on the theory related to this area. This dispersion of knowledge poses a challenge in pragmatic processing and integrating knowledge, theories, and previous

outcomes. Hence, this study's underlying research question: what factors increase acceptance of mobile advertising?

This study includes the research articles published in renowned journals from January 2007 till March 2021. Since mobile advertising is a global phenomenon, we included studies published in different regions in this review. This study makes several contributions to the body of knowledge. First, this systematic literature review consists of a comprehensive compilation of mobile advertising studies in several databases, being the first of its kind. Second, as reported in several dispersed research, the researchers have explored the critical variables in determining mobile advertising performance. Third, our systematic review will help future researchers to extend the framework developed in this study. Moreover, the findings will help the decision-makers develop well-received mobile advertising campaigns. Hence, allowing marketers to spend their budget on mobile advertising productively.

Methodology

This study used a six-stage method of writing a systematic review prescribed by (Pollock & Berge, 2018). The primary aim of this research paper is to conduct a systematic review of the literature to:

- To identify the factors affecting mobile advertising acceptance.
- To develop a probable research model describing how acceptance of mobile advertising can be increased.

This study aims to identify the variables that influence mobile advertising acceptance. We intend to develop a comprehensive model that defines the relationship between the variables identified.

Formulating Eligibility Criteria

This literature review is based on the quantitative, qualitative, and mixed-method studies published in recognized peer-reviewed journals. All the studies reporting factors affecting mobile advertising are included in this review.

The articles included match the following criteria:

- Written in English.
- Studies focused on defining mobile advertising through mobile apps and their notifications.
- Studies published in peer-reviewed journals
- Studies conducted after the launch of smartphones, i.e., 2007

- Studies including factors of mobile advertising acceptance, attitude or value

The articles with the following characteristics will be excluded:

- The studies define mobile advertising as advertising through SMS, MMS or calls.
- Articles published in other languages.
- Studies published before 2007.
- Articles with only outcomes of mobile advertising acceptance
- Conference proceedings, newspaper, magazine reports

Literature Search

Defining Search Strategy

We used the databases and search engines that publish marketing and advertising studies to identify the literature for this study. The study used the following databases: Elsevier, Sage Publication, Wiley Online, Springer, Emerald, Taylor & Francis, IEEE Xplore. The expression used for the search were: ("Mobile Advertising" OR "in-app Advertising" OR "Mobile Advertisement" OR "in-app advertisement") AND Acceptance. This study retrieved 1527 articles: 702 from the databases and 825 from the manual search. The inclusion period was from January 1, 2007, until March 31, 2021.

Selection of Abstract and Full-Text Article

We retained the studies matching the inclusion criteria. At the same time, we dropped studies matching the exclusion criteria. We filtered the literature based on titles, abstracts, and introductory sections at the initial stage. The study managed the search results through an open-source manager, Mendeley. After this shortlisting, we "Mixed-Method Assessment Tool" for further refinement. We dropped articles with a low score on MMAT. Based on the above-discussed methodologies, we retained 63 articles for further analysis. We have summarized the process of record selection in the PRISMA flowchart in Figure 1.

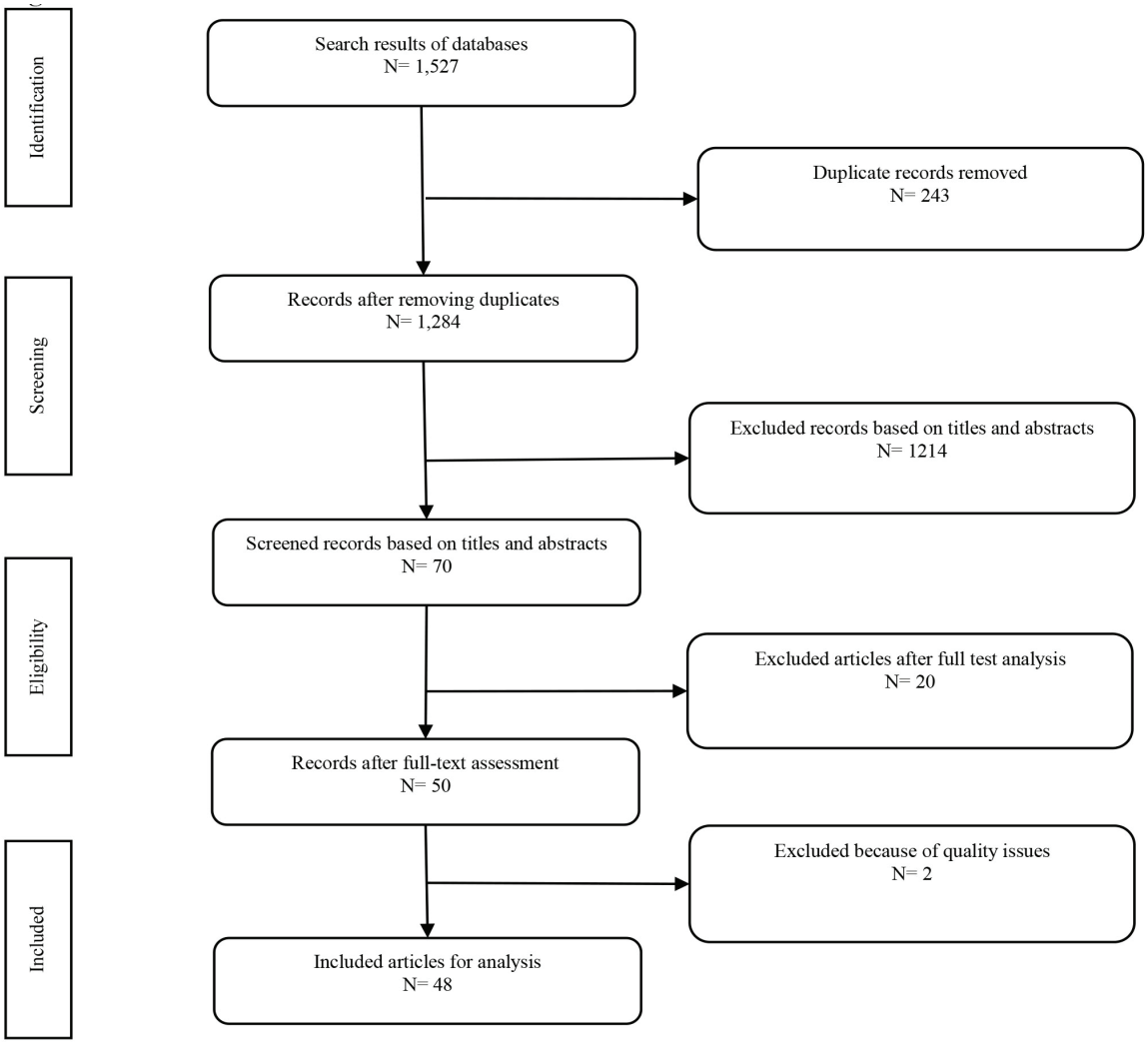


Figure 1: PRISMA

Quality Assessment

Quality assessment of the shortlisted articles is an essential element of a systematic review since the findings depend on the studies' quality. Therefore, we assessed the quality of all the articles using the Method Appraisal Tool (Hong et al., 2018). The studies are categorized as qualitative, quantitative, mixed-method study, randomized control trials, and non-randomized control trials. Accordingly, we evaluated each article on specific criteria. We excluded two studies as they didn't meet the criteria from the analysis. They had low methodological quality.

Data Extraction

The study developed a data extraction form to summarise information from the finalized articles. The information collected includes title, authors, year of publication, journal name, main findings, sample size, country of research, nature of the study, statistical analysis type, scoring, theory used, type of mobile advertising, and antecedents of mobile advertising value, attitude, and acceptance. The data collected on antecedents also included the direction of the relationship to prepare a nomological network of the variables related to mobile advertising acceptance.

Analyze and Synthesize Evidence

After data extraction, we analyzed and synthesized the retrieved documents. Analysis of the documents involves examining the characteristics of the articles, identifying the related aspects, and deriving possible reasoning. On the other hand, the synthesis process involves combining the knowledge extracted from individual articles to create new insights, which are not possible through the findings of one article. Based on the data extracted from the articles, the study carried out: bibliometric analysis and content analysis.

Bibliometric Analysis

As a first step, bibliographic information was utilized for analysis to identify the authors, documents, and sources most cited. Such articles are more valuable from the study's perspective. We retained a total of 48 studies for analysis after the quality assessment.

Distribution of Articles

This study retained those studies for a further analysis whose distribution was across various attributes. The articles meeting inclusion criteria were mostly from Science Direct, Emerald insights, and Taylor and Francis. Within Science Direct, the maximum number of articles came from Computers in Human Behaviour, Journal of Business Research, and Telematics and Informatics.

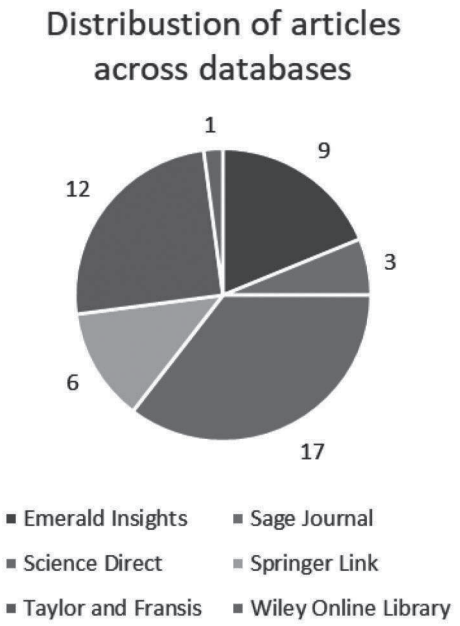


Figure 2: Database Distribution

Figure 3: Journal Distribution

Although mobile advertising has been an interest of research for around two decades, the publication on factors of smartphone mobile advertising has made its way to the body of literature since 2009. Therefore, the most publications included in this review are from 2016.

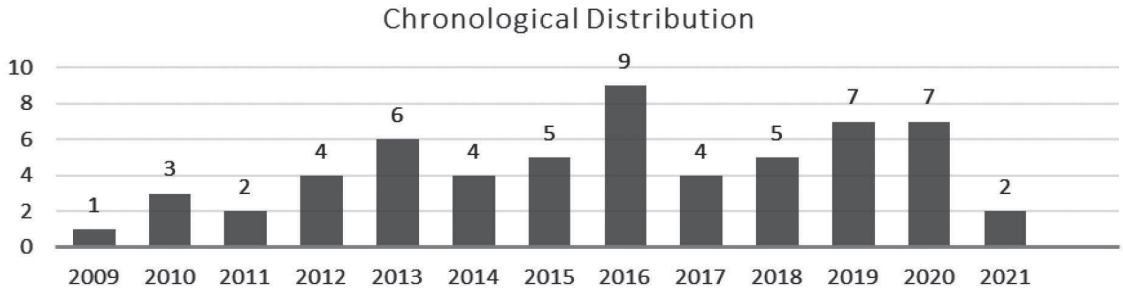


Figure 4: Chronological distribution

Authors and Co-authors

The bibliometric analysis revealed that the authors included in the review are 128, of which 11 are the most-cited authors illustrated in Figure 5. Among these authors, Gao, (Tao) Tony; Rohm, Andrew; Sultan Fareena; and Pagani, Margherita have co-authored

Documents (Figure 6).

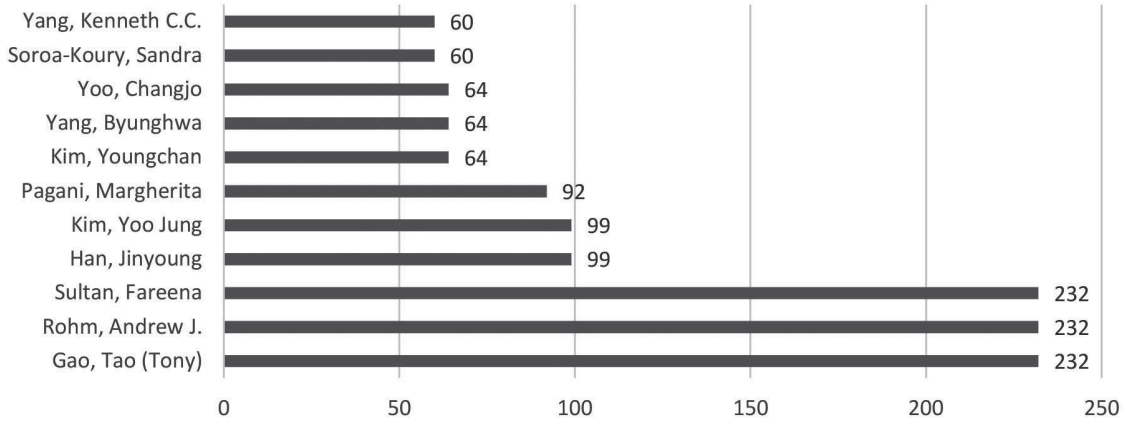


Figure 5: Authors' Citations

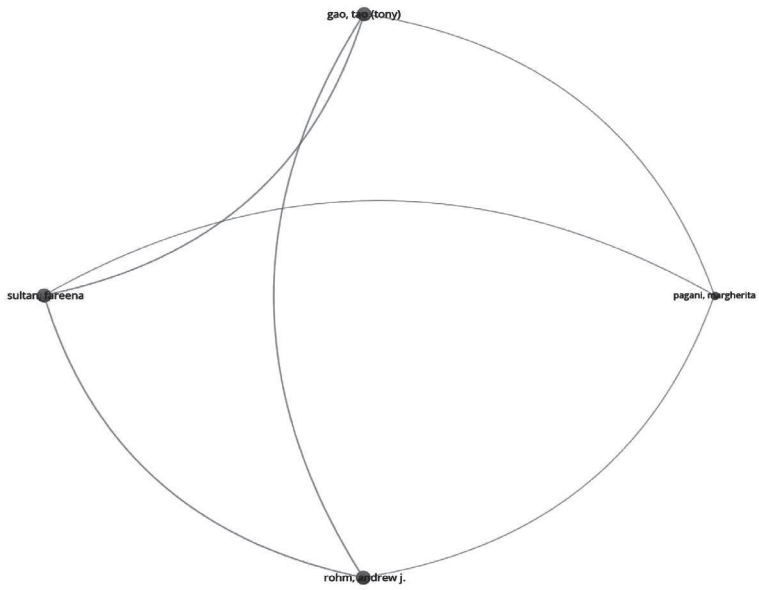


Figure 6: Co-Authors

The article citations revealed that most of the documents included in the review received ample citations. The most highly cited articles in this review are by Sultan (2009), and Yang (2013). The chart summarizes the number of citations of the ten most cited articles.

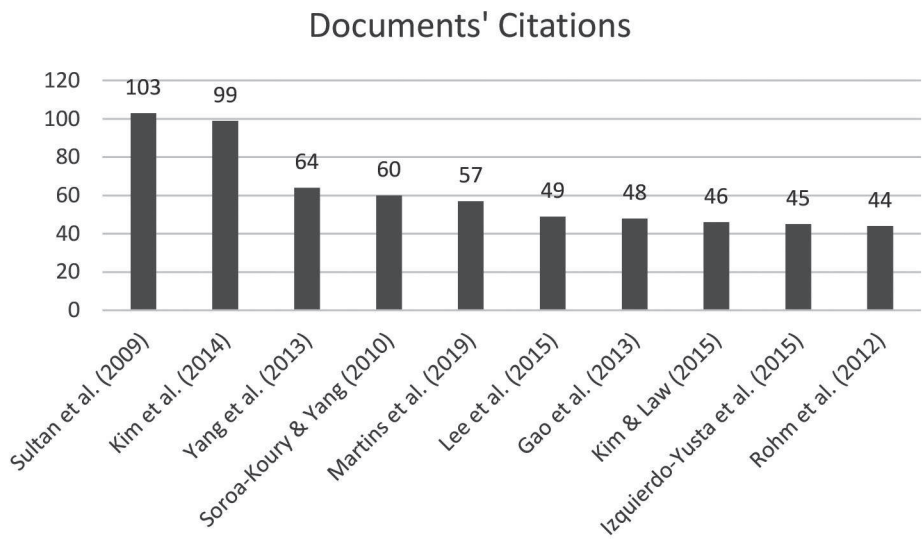


Figure 7: Documents' Citations

Geographical Coverage

The studies covered 25 countries from all six continents. Most of the studies are from Asia, Europe, and North America. However, the literature is quite scant from Oceania, South Africa, and South America on the factors affecting smartphone mobile advertising.

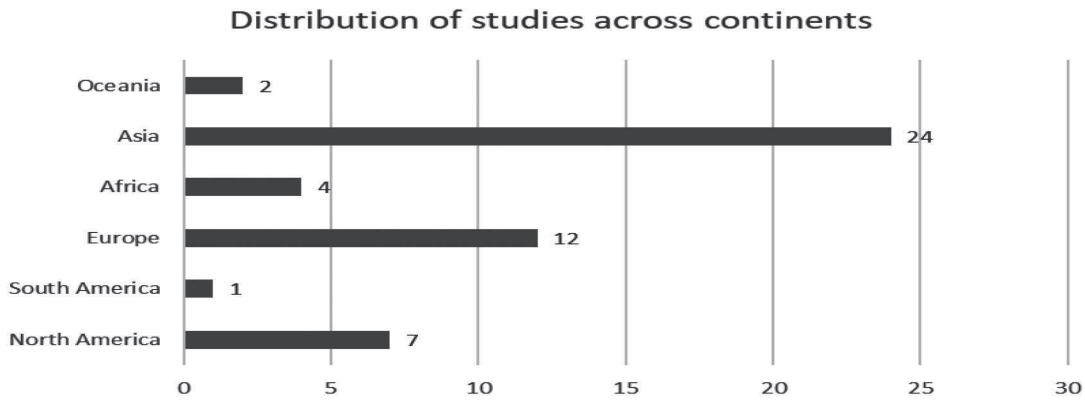


Figure 8: Continent Wise Distribution

Further analysis of studies based on varying internet penetration and cultural dimensions strength revealed notable findings. The studies equally covered the contexts with different uncertainty avoidance and indulgence levels. However, the literature on low internet penetration, masculinity, and power distance is scant. Refer to Figure 9 for the summary of results.

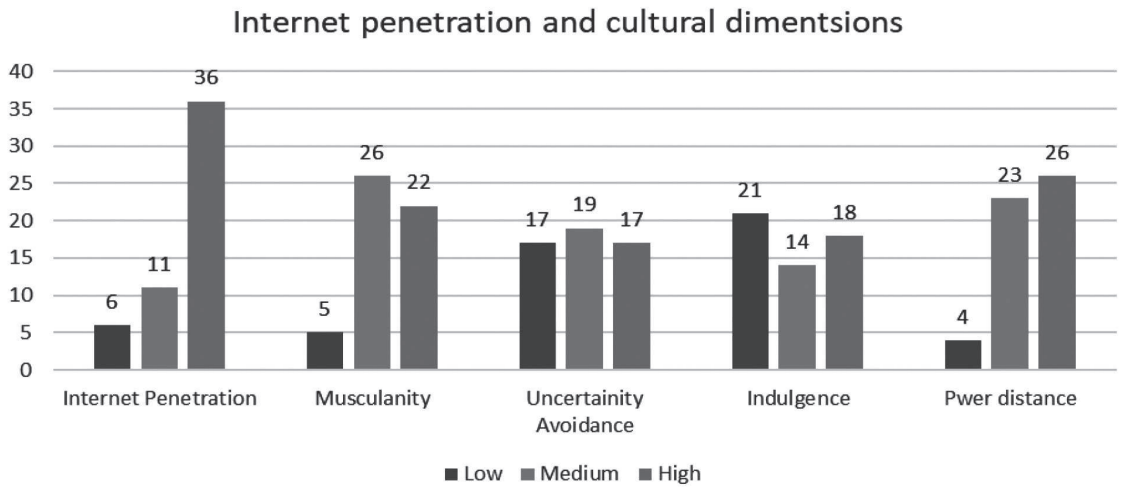


Figure 9: Internet penetration and cultural dimensions

Content Analysis

Despite the heterogeneity of studies included in this review, the study developed common themes based on the content analysis.

Type of studies

Most of the research studies on mobile advertising acceptance, value, and attitude were quantitative. However, qualitative studies have been quite a few compared to quantitative studies (Enwereuzor, 2017). Moreover, some quantitive studies have also focused on cross-regional comparisons.

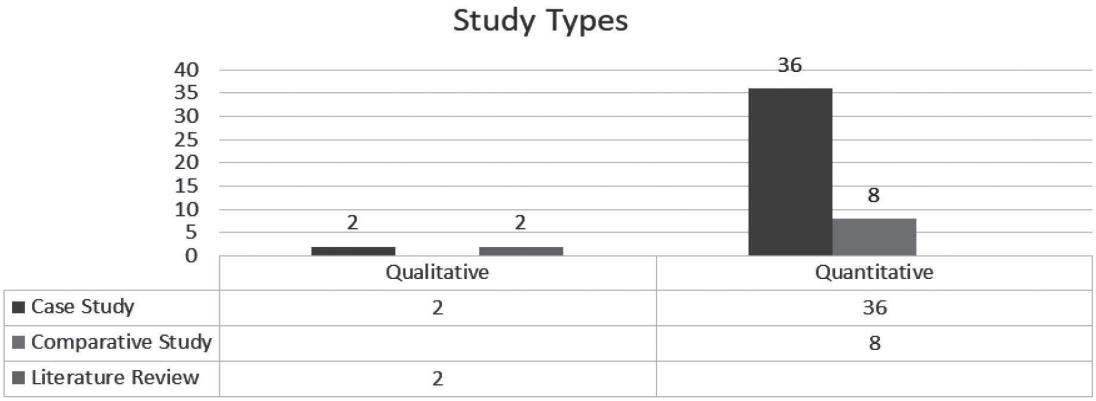


Figure 10: Study Types

The quantitative studies used five main types of statistical analysis: Partial Least Squared Structural Equation Modelling, Covariance based Structural Equation Modelling, ANOVA, MANOVA, and Regression Analysis. To apply these statistical analyses, the software utilized were mainly LISEREL, SmartPLS, AMOS, and SPSS. The study design utilized in these studies was either experimental, a questionnaire survey, or a combination of the two. All studies utilized a cross-sectional data collection design. Although some of the studies employed regional comparison, none of the research had a longitudinal design. The qualitative studies included in this review were either interview-based thematic analysis or reviews of the previously published research papers.

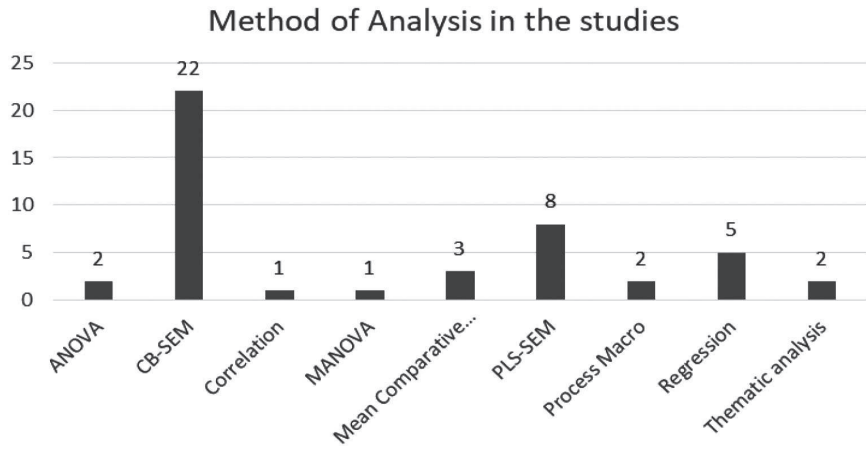


Figure 11: Analysis method used in studies

The Theoretical Framework Utilized

A strength of included studies was the pervasive use of theory to guide research. Some of the studies integrated more than one theory for the conceptual framework development (Achadinha et al., 2014; Gao et al., 2010; Gao et al., 2013; Hashim et al., 2018; Hühn et al., 2017; Krouwer et al., 2019; Kurtz et al., 2021; Le & Wang, 2020; Lee et al., 2017; Parreño et al., 2013; Sang-Ryu & Murdock, 2013; Sigurdsson et al., 2018; Soroa-Koury & Yang, 2010; Sultan et al., 2009; Wang & Lee, 2020; Wang et al., 2009; Wang & Genç, 2019; Wu et al., 2012; Yang et al., 2013). The most commonly studied theories include the technology acceptance model, theory of reasoned action, Uses and Gratification Theory, The Web Advertising Model, Theory of Advertising Value, Theory of Planned Behavior, and Theory of perceived reactance (Table 2). Some of the studies lacked an underpinning theory despite developing the hypothesis based on existing literature (Bauer & Strauss, 2016; Bhatia, 2020; Boateng et al., 2016; Kim & Law, 2015; Lee et al., 2015; Lu et al., 2019; Park et al., 2020; Rohm et al., 2012; Yousif, 2012).

Table 1A: Underpinning Theories

	TA	TRA	UG	WAM	TAV	TPB	TPR	MT	IAT	PCT	CLT
Achadinha al.(2014)	X	X									
Ashari-Naution et al. (2021)	X										
Yang et al.(2013)	X			X							
Baker and Badin (2014)	X										
Bauer and Strauss (2016)											
Bhatia, (2020)											
Boateng et al. (2016)											
Lee et al. (2017)					X	X					
Enwereuzor (2017)			X								
Feng et al. (2016)								X			
Gazley et al. (2015)									X		
Gutierrez et al. (2019)										X	
Kim and Law (2015)											
Yang et al. (2010)						X					
Hashim et al. (2018)					X	X					
Hühn et al. (2017)							X				X
Izquierdo-Yusta et al. (2015)	X					X					
Jiménez & San-Martín (2017)											
Ketelaar et al. (2018)											
Krouwer et al. (2019)			X								
Kurtz et al. (2021)		X								X	
Le & Wang. (2020)			X			X					
Limpf and Voorveld (2015)							X				
Lin and Bautista (2020)			X								
Liu et al. (2019)											
Maduku. (2020)							X				
Martins et al. (2019)					X						
Nwagwu and Famiyesin (2016)		X									
Okazaki et al. (2012)											
Park et al. (2020)											
Parreño et al. (2013)	X	X	X								
Rohm et al. (2012)											
Gao & Zang, (2016)											
Lee et al. (2015)											
Sang- Ryu and Murdock (2013)	X		X								
Shin et al. (2020)											
Sigurdsson et al. (2018)		X	X								
Soroa-Koury and Yang, 2010)	X	X									
Srisawatsakul and Papasratorn (2013)		X									

Sultan et al. (2009)	X		X								
Gao et al. (2013)	X	X		X							
Gao et al. (2010)	X										
Wang and Genç (2019)	X	X									
Wang et al. (2020)	X	X									
Wu et al. (2012)	X										
Lee (2016)											
Kim and Han (2014)				X							
Yousef (2012)											
Total	14	10	9	3	3	5	3	I	1	2	1

Note: Note: TA is Technology Acceptance; TRA is Theory of Reasoned Action; UG is Uses and Gratification; WAM is Web advertising; TAV is Theory of Advertising Value; TPD is Theory of Planned Behavior; TP is Theory of Perceived Behavior; MT is Motivation Theory; IAT is Interactive Theory; PCT is Privacy Calculus Theory; CLT is Contractual Level Theory

Table 1B: Underpinning Theories

	TSP	SPT	IET	IUT	SCT	FET	SNT	SCP	IUI	CST	IDT	NS
Achadinha et al.(2014)												
Ashari-Nauti on et al. (2021)												
Yang et al.(2013)												
Baker and Badin (2014)												
Bauer and Strauss (2016)												X
Bhatia, (2020)												X
Boateng et al. (2016)												X
Lee et al. (2017)												
Enwereuzor (2017)												
Feng et al. (2016)												
Gazley et al. (2015)												
Gutierrez et al. (2019)												
Kim and Law (2015)												X
Yang et al. (2010)												
Hashim et al. (2018)												
Hühn et al. (2017)												
Izquierdo-Yusta et al. (2015)												
Jiménez & San-Martín (2017)	X											
Ketelaar et al. (2018)		X										
Krouwer et al. (2019)			X	X	X							
Kurtz et al. (2021)												
Le & Wang. (2020)												
Limpf and Voorveld (2015)												
Lin and Bautista (2020)												
Liu et al. (2019)												X
Maduku. (2020)												
Martins et al. (2019)						X						
Nwagwu and Famiyesin (2016)												
Okazaki et al. (2012)									X			

Park et al. (2020)												X
Parreño et al. (2013)												
Rohm et al. (2012)												X
Gao & Zang, (2016)												
Lee et al. (2015)												X
Sang- Ryu and Murdock (2013)												
Shin et al. (2020)										X		
Sigurdsson et al. (2018)												
Soroa-Koury and Yang, 2010)							X					
Srisawatsakul and Papasratorn (2013)												
Sultan et al. (2009)												
Gao et al. (2013)												
Gao et al. (2010)												
Wang and Genç (2019)												
Wang et al. (2020)												
Wu et al. (2012)											X	
Lee (2016)								X				
Kim and Han (2014)												
Yousef (2012)												X
	1	1	1	1	1	1	1	1	I	1	1	19

Note: TSP is Theory of Shopping Preference ; SPT is Self-Persuasion Theory; IE is Intentional Exposure Theory; IU is Information Utility Theory; SCT is Source Creditability Theory; FET is Flow Experience Theory; SNT is Social Norm Theory; SCP is Social Capital Theory; IUI is Internet User Information ; CS is Consumer Socialization Theory; IND is The Innovation Diffusion Theory ; NS is no Specific Theory

Types of Mobile Advertising

The studies included in this review covered mainly six types of mobile advertising: permission-based advertising, location-based advertising, app-based advertising, QR code advertising, mobile web-based advertising, and smartphone advertising (Table 3). Notably, the researchers' interest in location-based advertising has increased substantially in the recent past (Bauer & Strauss, 2016; Gazley et al., 2015; Gutierrez et al., 2019; Hühn et al., 2017; Ketelaar et al., 2018; Kurtz et al., 2021; Le & Wang, 2020; S. Lee et al., 2015; Lee, 2016; Limpf & Voorveld, 2015; Lin & Bautista, 2020; Wu et al., 2012). However, despite being an important type of mobile advertising, very few studies matching inclusion criteria covered native or app-based advertising, and none covered reward-based advertising.

Table 2: Taxonomy of Mobile Advertising

Author, year	PBA	LBA	QR	APB	MC	WB	GA
Achadinha et al. (2014)					X		
Ashari Nasution et al.(2021)							X
Yang et al. (2013)							
Bakar and Bidin, (2014)							X
Bauer and Strauss (2016)		X					
Bhatia (2020)	X						
Boateng et al. (2016)							X
Lee et al. (2017)							X
Enwereuzor (2017)							X
Feng et al. (2016)							X
Gazley et al. (2015)		X					
Gutierrez et al. (2019)		X					
Kim & Law (2015)							X
Yang et al. (2010)							X
Hashim et al. (2018)							X
Hühn et al. (2017)		X					
Izquierdo-Yusta et al. (2015)	X						
Jiménez and San-Martín, 2017)							X
Ketelaar et al. (2018)		X					
Krouwer et al. (2019)				X			
Kurtz et al. (2021)		X					
Le & Wang (2020)		X					
Limpf and Voorveld (2015)	X	X					

Lin and Bautista (2020)		X					
Liu et al. (2019)							X
Maduku. (2020)							X
Martins et al. (2019)							X
Nwagwu and Famiyesin (2016)							X
Okazaki et al. (2012)							X
Park et al. (2020)				X			
Parreño et al,(2013)							X
Rohm et al. (2012)							X
Gao & Zang, (2016)							X
Lee et al. (2015)		X					
Sang- Ryu and Murdock (2013)			X				
Shin et al. (2020)				X			
Sigurdsson et al. (2018)				X			
Soroa-Koury and Yang (2010)							X
Srisawatsakul and Papasratorn,(2013)						X	
Sultan et al. (2009)							X
Gao et al. (2013)	X						
Gao et al. (2010)							X
Wang & Genç (2019)							X
Wang et al. (2020)							X
Wu et al. (2012)		X					
. Lee (2016)		X					
(Kim and Han, (2014)							X
Yousif (2012)							X
	4	12	1	4	1	1	25

Note: PBA is Permission Based Advertising; LBA is Location Based Advertising; QR is QR Codes; APB is App Based Advertising; MC is Mobile Coupon Advertising; WB is Web Based Advertising, GA is GA

Antecedents of Advertising Acceptance

Mobile Advertising Acceptance is substantially explained by a positive attitude towards Advertising (Achadinha et al., 2014; Gao & Zang, 2014; Gao et al., 2010; Gao et al., 2013; Izquierdo-Yusta et al., 2015; Limpf & Voorveld, 2015; Nwagwu & Famiyesin, 2016; Okazaki et al., 2012; Parreño et al., 2013; Sigurdsson et al., 2018; Soroa-Koury & Yang, 2010; Srisawatsakul & Papasratorn, 2013; Wang et al., 2020; Wang & Genç, 2019; Wu et al., 2012; Yang et al., 2013). Besides other factors, Mobile advertising attitude is affected by mobile advertising value (Izquierdo-Yusta et al., 2015; Lee et al., 2017). It is worth noting that mobile advertising acceptance is positively affected by advertising value (Lin & Bautista, 2020). Although the literature has not shown serial causation of mobile advertising value and attitude towards mobile advertising for mobile advertising acceptance, future research can test the indirect relationship between advertising value and mobile advertising acceptance through attitude towards advertising (Figure 12). To understand the determinants of mobile advertising acceptance, an in-depth analysis of factors of advertising value and attitude towards mobile advertising is necessary.

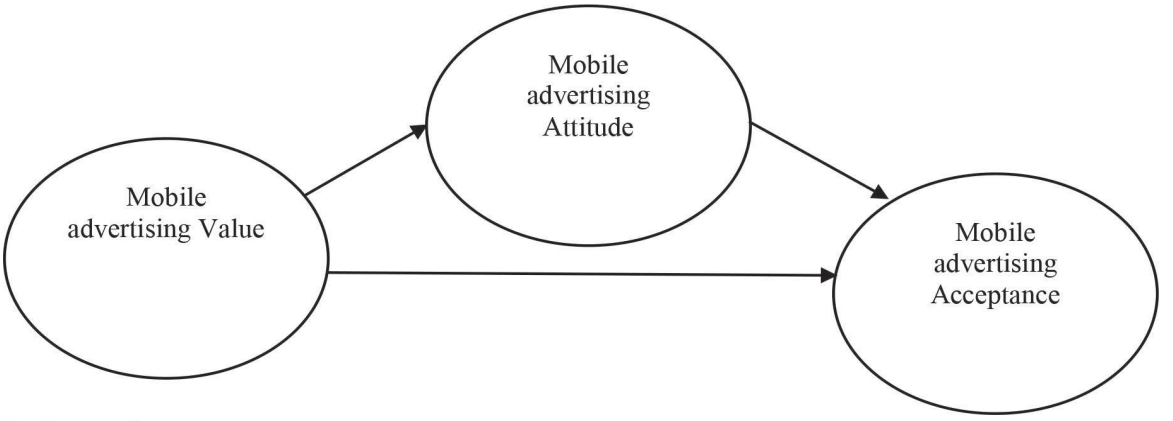
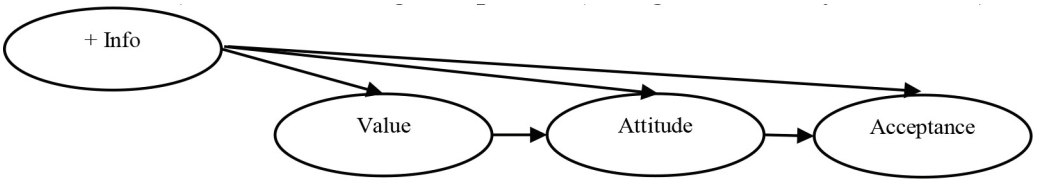


Figure 12

Informativeness

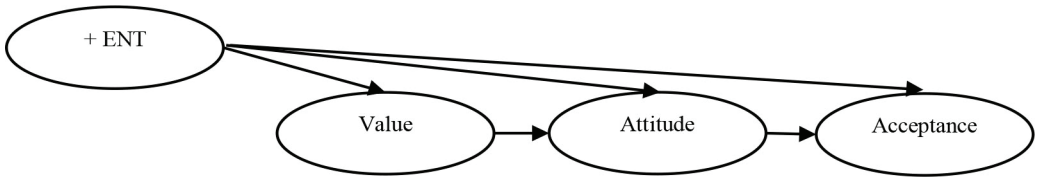
Informativeness of advertising content has a positive impact on advertising value (Kim & Han, 2014; Lee et al., 2017; Martins et al., 2019), attitude towards advertising (Hashim et al., 2018; Krouwer et al., 2019; Sigurdsson et al., 2018; Wang et al., 2020; Wang & Genç, 2019; Yousif, 2012) and advertising acceptance (Nwagwu & Famiyesin, 2016).



Entertainment

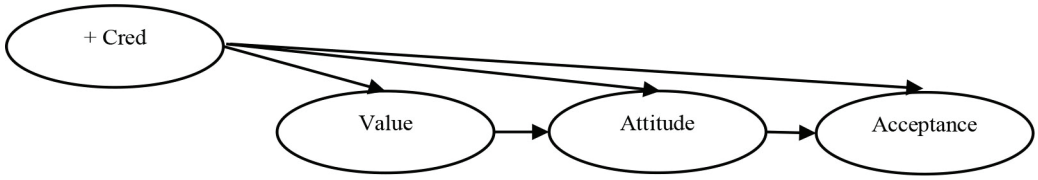
Entertainment of the advertising content is one of the most studied factors in mobile advertising acceptance. The entertaining advertising content positively impacts advertising value (Kim & Han, 2014; Lee et al., 2017; Lin & Bautista, 2020; Martins et al., 2019). Although entertainment leads to a positive attitude towards mobile advertising in general (Bhatia, 2020; Enwereuzor, 2017; Gao & Zang, 2016; Hashim et al., 2018; Parreño et al., 2013; Sang Ryu & Murdock, 2013; Sigurdsson et al., 2018; Wang et al., 2020; Y. Wang & Genç, 2019; Wu et al., 2012; Yousif, 2012). For LBA, the impact of entertainment is inconsistent on attitude towards advertising (Le & Wang, 2020; Wu et al., 2012), although we found entertainment is more influential in comparison with informativeness (Bauer & Strauss, 2016). However, only one study, conducted on public service employees in the LBA context in Nigeria, analyzed the impact of entertainment on advertising acceptance; it found that the effect of entertainment on the acceptance

was insignificant (Nwagwu & Famiyesin, 2016). Therefore, further researches should analyze the effect of entertainment element of advertising content in LBA context.



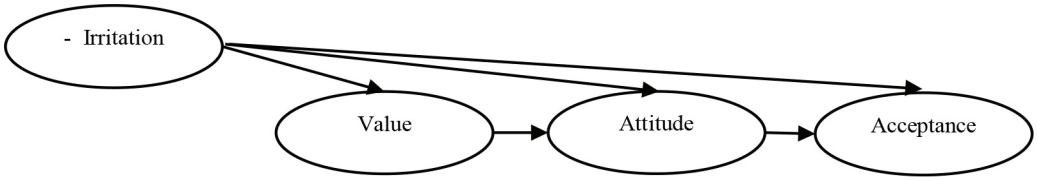
Credibility and Trust

Mobile advertising content that is believable, convincing, and credible leads to the higher value of mobile advertising (Kim & Han, 2014; Lin & Bautista, 2020; Martins et al., 2019). Mobile users have a positive attitude towards trustworthy and credible ads (Krouwer et al., 2019; Le & Wang, 2020; Wang et al., 2020). However, in a low internet penetration country like India, the impact of credibility on attitude is insignificant. At the same time, in the UK, the credibility of the advertisement improves mobile users' attitudes towards app-based advertising (Sigurdsson et al., 2018). In terms of advertising acceptance, the credibility of the advertisements improves their acceptance (Liu et al., 2019). However, a study in Nigeria on public sector employees concluded that credible advertisements negatively impact ad acceptance (Nwagwu & Famiyesin, 2016).



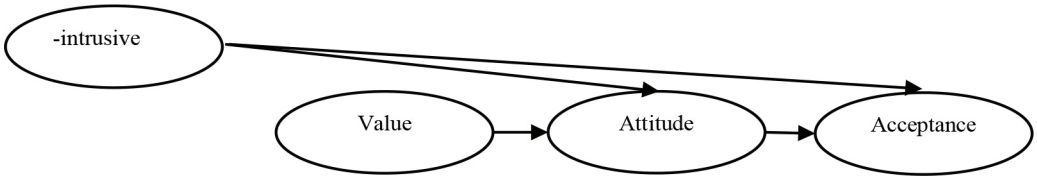
Irritation

Marketers believe irritating or annoying ads are perceived as less valuable (Lin & Bautista, 2020; Martins et al., 2019). One study in South Korea among students found that irritation has an insignificant effect on ad value (Kim & Han, 2014), whereas another study of South Korea with a similar sample showed a negative impact on advertising value (Lee et al., 2017). Although the two studies' context was similar, the set of variables in them was different. Notably, in the study in which the impact of irritation was insignificant, the credibility of the advertisement has the largest effect size. Mobile users have a negative attitude towards annoying and irritating ads (Boateng et al., 2016; Gao & Zang, 2014; Parreño et al., 2013; Wang & Genç, 2019). However, some of the studies found irritation to have an insignificant impact on attitude towards the advertisement (Hashim et al., 2018; Lee, 2016; Sigurdsson et al., 2018).



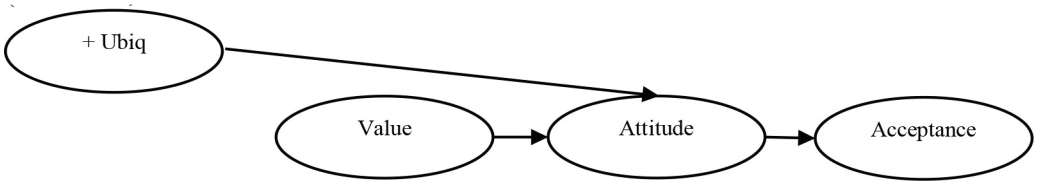
Intrusiveness

The mobile advertisements at times felt at impeding and intruding the mobile users' activities; the impact of intrusiveness on attitude towards mobile advertising is found insignificant in some of the studies (Bhatia, 2020), while negative in other contexts (Enwereuzor, 2017; Gazley et al., 2015; Ketelaar et al., 2018). Likewise, if an advertisement is intrusive, its acceptance among mobile users suffers (Gutierrez et al., 2019; Maduku, 2020).



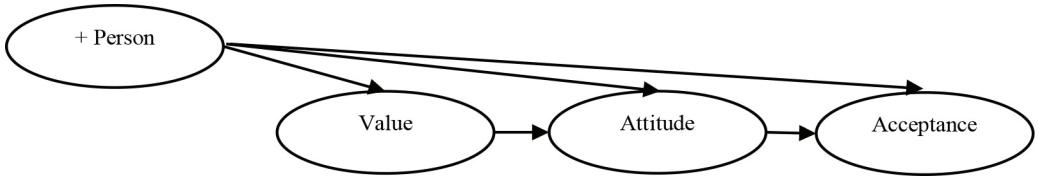
Ubiquity

Ubiquity, being available anywhere, is a distinguishing factor of smartphones compared to personal computers. Although this factor positively impacts attitude towards mobile advertising (Okazaki, 2005), it insignificantly impacts mobile advertising acceptance (Okazaki, 2005).



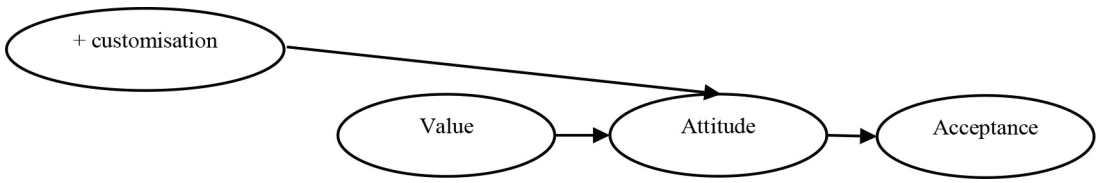
Personalization

The mobile advertisements that have personal relevance to the mobile users leads to better attitude towards the ads (Bhatia, 2020; Enwereuzor, 2017; Gao & Zang, 2014; Gao et al., 2013; Jiménez & San-Martín, 2017; Kurtz et al., 2021; Le & Wang, 2020; Park et al., 2020; Rohm et al., 2012). The advertisements that align with mobile users' preferences are more highly valued (Lee et al., 2017; Lin & Bautista, 2020). Moreover, personalized advertisements have more acceptance among mobile users (Gutierrez et al., 2019).



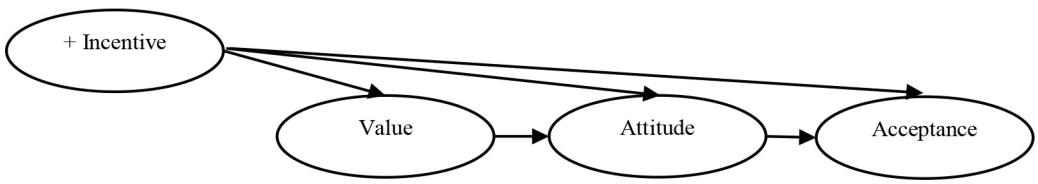
Customization

Mobile users, who customize the information that they allow to receive, have a more positive attitude towards mobile advertising (Gazley et al., 2015; Lee et al., 2015) and show higher acceptance for mobile advertising (Gao et al., 2010; Sultan et al., 2009). Moreover, mobile users display more liking for customized ads when the consumers are involved with the product advertised (Lee et al., 2015). However, a study in Germany showed a statistically insignificant effect of granting permission to provide information on attitude towards advertisements (Kurtz et al., 2021)



Incentive

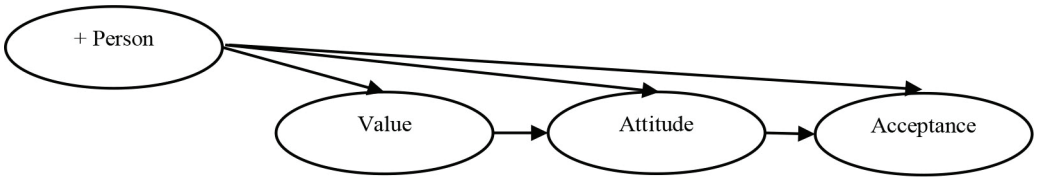
The advertisements that offer gifts, coupons, discounts, or other benefits to mobile users hold more value for mobile users (Kim & Han, 2014; Martins et al., 2019). Moreover, the incentives lead to a positive attitude towards mobile advertising (Kurtz et al., 2021; Le & Wang, 2020). When mobile users expect to receive monetary benefits from receiving the advertisements, they like the advertisements more (Achadinha et al., 2014; Bhatia, 2020). In addition, the incentives in general (Wang & Genç, 2019) and in monetary form (Gutierrez et al., 2019) also increase acceptance of mobile advertising.



Contextualization

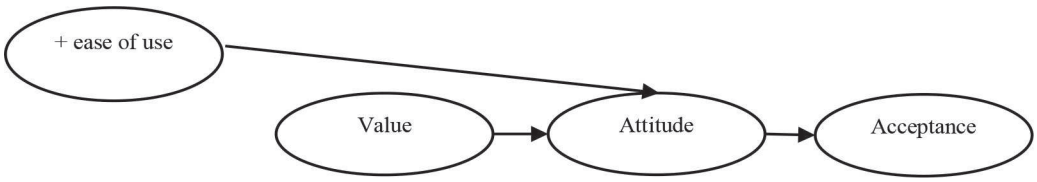
Smartphone users value advertisements that are well-adjusted with the time and location of the mobile users (Hashim et al., 2018; Lin & Bautista, 2020). Contextual

synchronization makes a positive impact on the attitude towards mobile advertising for location-based advertising (Gazley et al., 2015; Kim & Law, 2015; Kurtz et al., 2021; Le & Wang, 2020; Lee et al., 2015; Srisawatsakul & Papasratorn, 2013). However, it doesn't make a statistically significant impact on advertising acceptance in general advertising (H. Yang et al., 2010). Although contextualized advertising positively influences the ad value, attitude, and acceptance, mobile users are cautious about sharing their location with the marketers (Bauer & Strauss, 2016).



Perceived Ease of Use

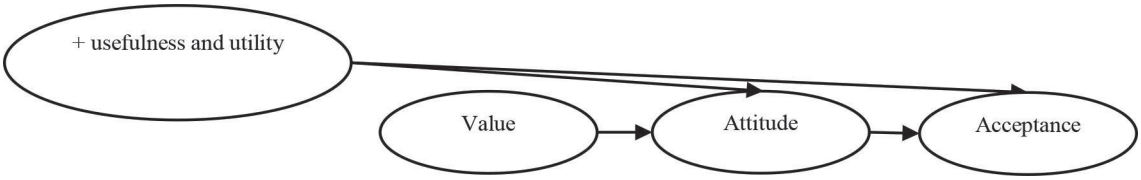
The mobile users who believe that it is easy to use mobile phones have a positive attitude towards mobile advertisements (Achadinha et al., 2014; Bakar & Bidin, 2014; Parreño et al., 2013; Sang-Ryu & Murdock, 2013; Wang et al., 2020; Wang & Genç, 2019). Similarly, when mobile users feel that the devices are triable, they like the advertisements Wu et al., 2012). Similarly, in permission-based advertising, mobile users' liking of advertisements is lower, requiring effort in registration for receiving ads (Bhatia, 2020). However, some studies show that ease of use does not affect the attitude towards mobile advertisements (Izquierdo-Yusta et al., 2015; Shin et al., 2020; Soroa-Koury & Yang, 2010; Wu et al., 2012). Since there is inconsistency in the effect of ease of use on attitude, there is a need for more studies by incorporating demographic and psychographic factors as moderators or mediators into the relationship.



Perceived Usefulness

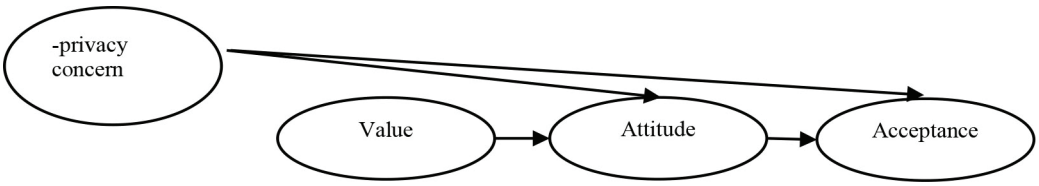
The advertisements perceived as useful by mobile users lead to a positive attitude towards mobile advertisements (Ashari-Nasution et al., 2021; Bakar & Bidin, 2014; Rohm et al., 2012; Sang-Ryu & Murdock, 2013; Soroa-Koury & Yang, 2010).The perceived utility of the advertisements increases their acceptance (Liu et al., 2019; Srisawatsakul & Papasratorn, 2013; Yang et al., 2010). Moreover, when mobile users perceive emotional value for the advertisements, they like the advertisements more (Yang et al., 2013). For

LBA, navigation support also positively enhances advertising attitude (Kurtz et al., 2021). However, in Vietnam, a study showed an insignificant impact of perceived usefulness on attitude towards advertisements where the sample of this study comprised older respondents from a lower uncertainty avoidance culture compared to other studies where respondents were younger.



Privacy Concerns and Risks

Mobile users are highly sensitive about privacy concerns (Bauer & Strauss, 2016). Therefore, me users usually harbour negative feelings towards the advertisements that seem to hamper their privacy by having access to their personal information such as their contacts, messages, browsing history, etc. (Lee, 2016; Limpf & Voorveld, 2015; Wang et al., 2020). Similarly, mobile users dislike advertisements that have certain elements (Ashari-Nasution et al., 2021; Gao et al., 2013; Le & Wang, 2020; Okazaki, 2005). In addition to this, the privacy concerns (Gutierrez et al., 2019; Limpf & Voorveld, 2015; Maduku, 2020) and risk in general (Ashari-Nasution et al., 2021; Gao et al., 2013; Le & Wang, 2020; Okazaki & Taylor, 2013; Yang et al., 2010) can lead to lower acceptance of the mobile advertisements.

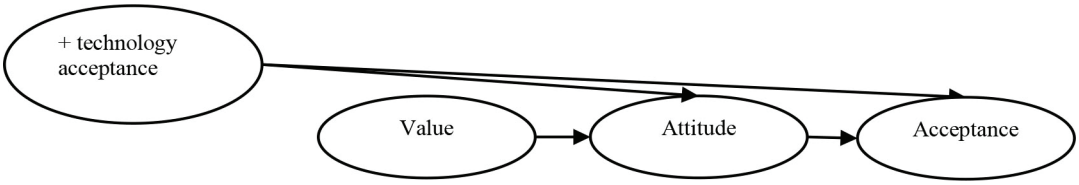


Consumer Autonomy and Permission

Mobile users have a positive attitude towards advertisements when they grant permission to receive them (Enwereuzor, 2017; Gazley et al., 2015; Krouwer et al., 2019). The mobile users in uncertainty-averse cultures show a lack of readiness to receive mobile advertisements when they control the commercial messages. In contrast, mobile users from low uncertainty avoidance countries have a positive attitude towards mobile advertising when they feel in control (Jiménez & San-Martín, 2017). Mobile users who feel they have control over receiving the mobile promotional materials show lower acceptance for mobile advertising (Yang et al., 2010).

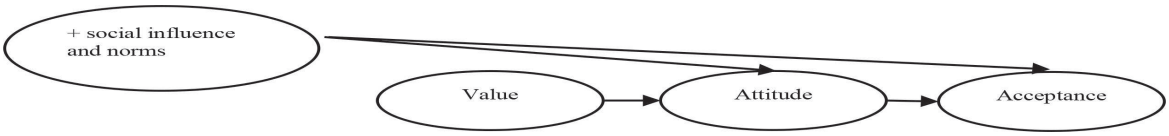
Mobile Users and Technology Acceptance

The innovative mobile users have a positive attitude towards mobile advertisements (Boateng et al., 2016; Gao et al., 2013; Rohm et al., 2012). Furthermore, tile users, who accept mobile technology (Jiménez & San-Martín, 2017), spent more time on mobile phones (Gazley et al., 2015) and show attachment with mobile devices (Gao et al., 2013; Rohm et al., 2012) have a positive attitude towards the advertisements. Moreover, the mobile users, who access information and provide information about the product on social media (Gao et al., 2010; Sultan et al., 2009), and believe that mobile devices offer interactivity (Liu et al., 2019), have higher acceptance for mobile advertisements.



Social value and Social Norms

Studies suggest that the social environment of mobile users affects their attitudes. Mobile users happily receive advertisements if they believe they will enhance their social interaction (Wang et al., 2009; Wang & Genç, 2019) and positively affect their social influence (Jiménez & San-Martín, 2017; Le & Wang, 2020). These positive social elements also increase mobile advertising acceptance (Nwagwu & Famiyesin, 2016; Srisawatsakul & Papasratorn, 2013). However, the political affiliation of the mobile promotional material reduced its acceptance (Maduku, 2020). However, the nativity of the advertisement (the promotional posts that look like friends or contacts in the messenger apps) does not influence the attitude of mobile users towards the ads (Park et al., 2020).



Both intrinsic (determined by innovativeness and entertainment) and extrinsic (timeliness, localization, and personalization) motivational factors have a positive impact on the attitude towards mobile advertising (Feng et al., 2016).

Table 3: Antecedents to Mobile Adverting

Author/Year	IN	ENT	CR	IR	PR	IN	CN
Lee et al. (2017)	P	P		N	P		
Hühn et al. (2017)							P
Lin and Bautista (2020)		P	P	N	P		P
Martins et al. (2019)	P	P	P	N		P	
Kim (Han, 2014)	P	P	P	NS		P	

Note: IN, is in-formativeness, ET is Entertainment, CR=Creditability, IR=Irrational, INT is Intrusiveness PR is personalization, CN= Contextualization. Note: P = Positive Effect, N = Negative Effect, NS = Not Significant

Table 4A: Antecedents of Attitude towards Advertising

Author, year	IN	EN	CR	IR	INT	PER	PEU	PU	PR
Achadinha et al. (2014)									
Ashari-Nasution et al. (2021)								P	N
Yang et al., 2013)									
Bakar and Bidin (2014)							P	P	
Bhatia (2020)		P			NS				
Boateng et al. (2016)				N					
Lee et al. (2017)									
Feng et al. (2016)									
Gazley et al. (2015)					N				
Hashim et al. (2018)	P	P	NS	NS					
Izquierdo-Yusta et al. (2015)							NS		
Jiménez & San-Martín (2017)									
Ketelaar et al. (2018)					N				
Kurtz et al. (2021)						P			
Le & Wang (2020)		NS	P			P			N
Limpf & Voorveld (2015)									
Okazaki et al. (2012)					N				N
Park et al. (2020)									
Parreño et al.(2013)		P		N			P		
Rohm et al. (2012)								P	
Gao and Zang, 2016)		P	P	N		P			
Lee et al. (2015)									
Sang-Ryu and Murdock (2013)		P					P	P	
Chin et al. (2020)							NS, P		
Sigurdsson et al. (2018)	P	P	P, NS	NS		NS			
Soroa-Koury and Yang (2010)							NS	P	
(Srisawatsakul and Papasratorn (2013)									
Gao et al. (2013)								P	N
Wang & Genç (2019)	P	P	P	N			P		
Wang et al. (2020)	P	P	P				P		
Wu et al. (2012)		P					NS	NS	
Lee (2016)				NS					
Yousif (2012)	P	P	P						

Note: IN is Informatiivenes; EN is Entertainment; CR is Credibility; IR is Irritation; INT is Intrusiveness; PER is Personalization; PEU is Perceived Ease of Use; PU is Perceived Usefulness; PR is Perceived Risk

Table 4B: Antecedents of Attitude towards Advertising

Author, year	TR	AMT	EBE	CI	SV	INV	TS	CS	PR	NS
Achadinha et al. (2014)										
Ashari Nasution et al. (2021)										
B. Yang et al., 2013)		P	P							
Bakar and Bidin (2014)										
Bhatia (2020)										
Boateng et al. (2016)				P						
E. B. Lee et al. (2017)										
Feng et al. (2016)										
Gazley et al. (2015)						NS	P	P	P	
Hashim et al. (2018)										
Izquierdo-Yusta et al. (2015)										
Jiménez & San-Martín (2017)		P								
Ketelaar et al. (2018)										
Kurtz et al. (2021)									NS	P
Le & Wang (2020)										
Limpf & Voorveld (2015)										
Okazaki et al. (2012)										
Park et al. (2020)										
Parreño et al.(2013)										
Rohm et al. (2012)				P						
S. Gao and Zang, 2016)										
(S. Lee et al. (2015)						P		P		
Sang Ryu and Murdock (2013)										
(Shin et al., 2020)							NS			
(Sigurdsson et al. (2018)										
(Soroa-Koury & Yang (2010)										
(Srisawatsakul and Papasratorn (2013)										
Gao et al. (2013)				P						
Wang & Genç (2019)					P. NS					
Wang et al. (2020)					P					
Wu et al. (2012)	P									
Y. C. Lee (2016)										
Yousif (2012)										
	1	2	1	3	2	2	2	2	2	1

Note TR is Tradability; AMT is Acceptance of Mobile Technology; EBE is Emotion Based Evaluation; CI is Consumer Innovativeness; SV is Social Value; INV is Involvement; TS is Time Spent on Smart Phone; CS is Customization; PR is Permission; Navigation Support.

Table 4C: Antecedents to Attitude towards Advertising

Author, year	CN	SI	PA	CA	PC	RE	CN	EM	IM
Achadinha et al. (2014)							P		
Ashari Nasution et al. (2021)									
B. Yang et al., 2013)									
Bakar & Bidin (2014)									
Bhatia (2020)				NS	NS	N			
Boateng et al. (2016)									
E. B. Lee et al. (2017)									
Feng et al. (2016)								P	P
Gazley et al. (2015)									
Hashim et al. (2018)									
Izquierdo-Yusta et al. (2015)		P		NS					
Jiménez & San-Martín (2017)		P		N					
Ketelaar et al. (2018)									
Kurtz et al. (2021)	PM								
Le & Wang (2020)	p	P							
Limpf & Voorveld (2015)					N				
Okazaki et al. (2012)									
Park et al. (2020)									
Parreño et al.(2013)									
Rohm et al. (2012)			P						
S. Gao & Zang (2016)									
S. Lee et al. (2015)	P								
Sang Ryu and Murdock (2013)									
Shin et al. (2020)		NS, N							
Sigurdsson et al. (2018)									
Soroa-Koury & Yang (2010)									
Srisawatsakul and Papasratorn, (2013)	p								
Gao et al. (2013)			P						
Wang and Genç (2019)					N				
Wang et al. (2020)									
Wu et al. (2012)									
Y. C. Lee (2016)					N				
Yousif (2012)									

Note: CN is contextualization; SI is Social Influence; PA is Personal Attachment; CA is Customer Autonomy; PC is Privacy Concern; RE is Registration Effort; CA is convenience; EM is Extrinsic Motivation; IM is Intrinsic Motivation

Table 4D: Antecedent of Attitude towards Advertising

Author, year	TA	NA	TS	APM	RPM	IF	MAV	PRC	MT	IN
Achadinha et al. (2014)									p	
Ashari Nasution et al. (2021)										
B. Yang et al., 2013)										
Bakar & Bidin (2014)										
Bhatia (2020)								P	p	
Boateng et al. (2016)										
E. B. Lee et al. (2017)							P			
Feng et al. (2016)										
Gazley et al. (2015)										
Hashim et al. (2018)										
Izquierdo-Yusta et al. (2015)							P			
Jiménez & San-Martín (2017)								P		
Ketelaar et al. (2018)										
Kurtz et al. (2021)										P
Le & Wang (2020)										p
Limpf & Voorveld (2015)	NM									
Okazaki et al. (2012)										
Park et al. (2020)		NS	NS					PM		
Parreño et al.(2013)										
Rohm et al. (2012)										
S. Gao & Zang (2016)										
S. Lee et al. (2015)										
Sang Ryu and Murdock (2013)										
Shin et al. (2020)				NS	N	NS				
Sigurdsson et al. (2018)										
Soroa-Koury & Yang (2010)										
Srisawatsakul and Papasratorn, (2013)										
Gao et al. (2013)										
Wang and Genç (2019)										
Wang et al. (2020)										
Wu et al. (2012)										
Y. C. Lee (2016)										
Yousif (2012)										
	1	1	1	1	1	1	2	3	2	2

Note: TA is Type of Advertising; NA is Nativity; TS is Thinking Style; APM is Active Parental Mediation; Restrictive Parental Mediation; IF is Informational Peer Influence; MAV is Mobile Advertising Value; PRC is Personal Relevance; MT is Monetary/Economic Benefit; IN is Incentive

Table 5A: Antecedents to Adverting Acceptance

Author, year	IN	EN	CR	IR	INT	PER	AMT	EBE	SV	MB	PV
Achadinha et al. (2014)											
B. Yang et al. (2013)							P				
Gutierrez et al. (2019)					N	P				P	
H. Yang et al. (2010)			P								P
Izquierdo-Yusta et al. (2015)											
Limpf & Voorveld (2015)											
Lin & Bautista (2020)											
Liu et al. (2019)			P					NS			P
Maduku (2020)					N						
Nwagwu & Famiyesin (2016)	P	NS	N	P		NS					
Okazaki et al. (2012)					NS						
Parreño et al. (2013)											
S. Gao & Zang (2016)										P	
Sigurdsson et al. (2018)											
Soroa-Koury & Yang (2010)											
Srisawatsakul & Papasratorn, (2013)									P		P
Sultan et al. (2009)											
Gao et al. (2013)											
Gao et al. (2010)											
(Wang & Genç (2019)										P, NS	
Wang et al. (2020)											
Wu et al. (2012)											
	1	1	3	1	3	2	1	1	1	3	3

Note: IN is Informativeness; EN is Entertainment; CR is Creditability; IR is Irritation; INT is Intrusiveness; PER is Personalization; AMT is Acceptance of Mobile Advertising; EBE is Emotional Based Evaluation; SV is Social Value; INT is Incentive Monetary Benefit; PER is Perceived Value.

Table 5B: Antecedents to Adverting Acceptance

Author, year	CN	SI	PA	CA	PC	SC	INT	SI	AI	PI	BC	PE	MA	AT
Achadinha et al. (2014)		NS									P			P
Yang et al. (2013)														P
Gutierrez et al. (2019)					N									
Yang et al. (2010)	NS			N		N								
Izquierdo-Yusta et al. (2015)														P
Limpf & Voorveld (2015)					N									P
Lin & Bautista (2020)													P	
Liu et al. (2019)							P							
Maduku (2020)					N							N		
Nwagwu & Famiyesin (2016)		P									P			P
Okazaki et al. (2012)														P
Parreño et al. (2013)														P
Gao & Zang (2016)														P
Sigurdsson et al. (2018)														P
Soroa-Koury and Yang (2010)														P
Srisawatsakul and Papasratorn, (2013)														P
Sultan et al. (2009)								NS	P	P				
Gao et al. (2013)														P
Gao et al. (2010)								N	P	P				
Wang & Genç (2019)			P		NS									P
Wang et al. (2020)														P
Wu et al. (2012)														P
	1	2	1	1	4	1	1	2	2	2	2	1	1	15

Note: CN is Contactualization, SI is Social Influence; PA is Personal Attachment; CA is Customer Autonomy; PC is Privacy Concerns; SC is Sacrifices; INT is Interactivity; SI Sharing Information; AI is Assissing Information; PI is Providing Information; BC is Behaviour Control, PE is Political Efficacy; MA is Mobile Advertising and AT is Attitude towards Mobile.

Location-based advertising (LBA) and Smartphone Advertising in General (SA)

Entertainment, credibility, personal relevance, and contextualization enhance the value of mobile advertising in the LBA context, whereas irritation of ad content diminishes the value. In terms of mobile advertising attitude, entertainment, personalization, try ability, involvement, time spent on smartphones, customization, contextualization, permission, navigation support, incentive, and trust positively impact mobile users' attitudes. However, intrusiveness and privacy concerns lead to mobile users disliking LBA. Moreover, personalization, economic benefits, and attitude towards LBA advertisements increase acceptance of LBA, whereas privacy concerns and intrusiveness reduce acceptance.

Overall, mobile users perceive LBA positively, and they have higher acceptance of the LBA when presented at leisure time, in public places, or while they are shopping (Bauer & Strauss, 2016). On the other hand, general advertising that is informative, entertaining, credible, and provides incentive increases the value, while irritation decreases the value of mobile advertising in general. Thus, in addition to mobile advertising value, mobile users like the advertisements that are informative, entertaining, credible, higher perceived ease of use, perceived usefulness, higher acceptance of mobile technology, emotion attachment, consumer innovation, and socially valuable. On the other hand, mobile users dislike annoying, risky advertising. Moreover, informativeness, credibility, ubiquity, social value, interactivity, behavioral control, and attitude towards mobile advertising increase acceptance. In contrast, intrusiveness, customer autonomy, privacy concerns, and sacrifice of personal information reduce mobile advertising acceptance.

Table 6: LBA and General Mobile Advertising

Endogenous Variable	LBA	General mobile advertising
Value	**+ve effect** Entertainment, credibility, personal relevance, contextualization **-ive effect** Irritation	**+ive effect** Informativeness, Entertainment Credibility **-ive effect** Irritation
Attitude	**+ive effect** entertainment, personalization, try ability, involvement, Time spent on phone, Customization, contextualization, Permission, Navigation support, incentive, Trust **-ive effect** Privacy concern Intrusiveness	**+ive effect** Informativeness, Entertainment Credibility, Irritation Ease of Use, Usefulness Mobile tech Acceptance Emotional value Customer Innovativeness Social Value **-ive effect** Irritation, Risk, Customer autonomy
Acceptance	**+ive effect** personalization, economic benefits, attitude towards LBA **-ive effect** Privacy concerns Intrusiveness	**+ive effect** Informativeness, credibility, irritation, ubiquity, social value, interactivity, behavioural control, and attitude towards mobile advertising **-ive effect** intrusiveness, customer autonomy, privacy concerns, and sacrifice

Discussion

The findings of this study revealed several antecedents of mobile advertising value, attitude, and acceptance. Some of the factors are context-specific, while others are generally applicable to various contexts in mobile advertising. These factors can be classified into three main categories: Advert attributes, personal factors, and environmental factors. The advert attributes can be described as the characteristics and features of an advertisement. Personal factors are the feelings and personal characteristics that influence acceptance of the advisements, for example, trust, perceived ease of use, mobile technology acceptance, etc. Moreover, environmental factors are the attributes external to the person and the advertisement; for example, the influence of friends, family, place, and time where ads are received. The antecedents observed in the analysis are summarized under these categories in Figure 13. This study, based on an extensive literature review, has analyzed the significance and direction of the effect of the antecedents on an individualized level.

However, the literature neither consolidates these factors nor assesses their relative

importance in accepting mobile advertisements. Figure 13,

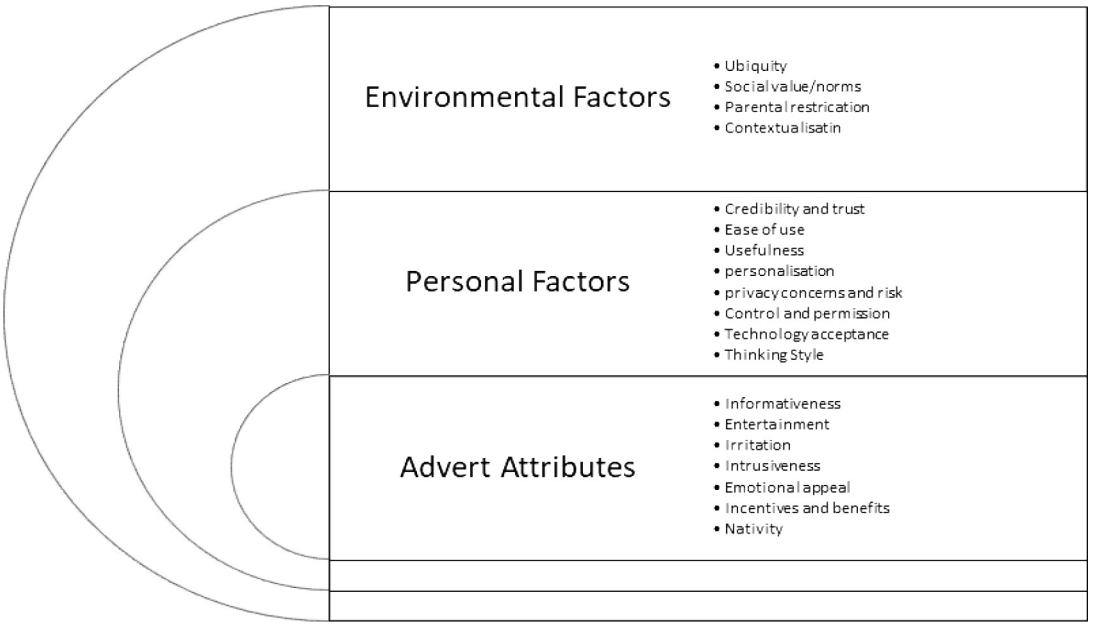


Figure 14: Classification of Factors

The antecedents of mobile advertising value, attitude and acceptance, and the relationship among them are summarised in the nomological network in Figure 15.

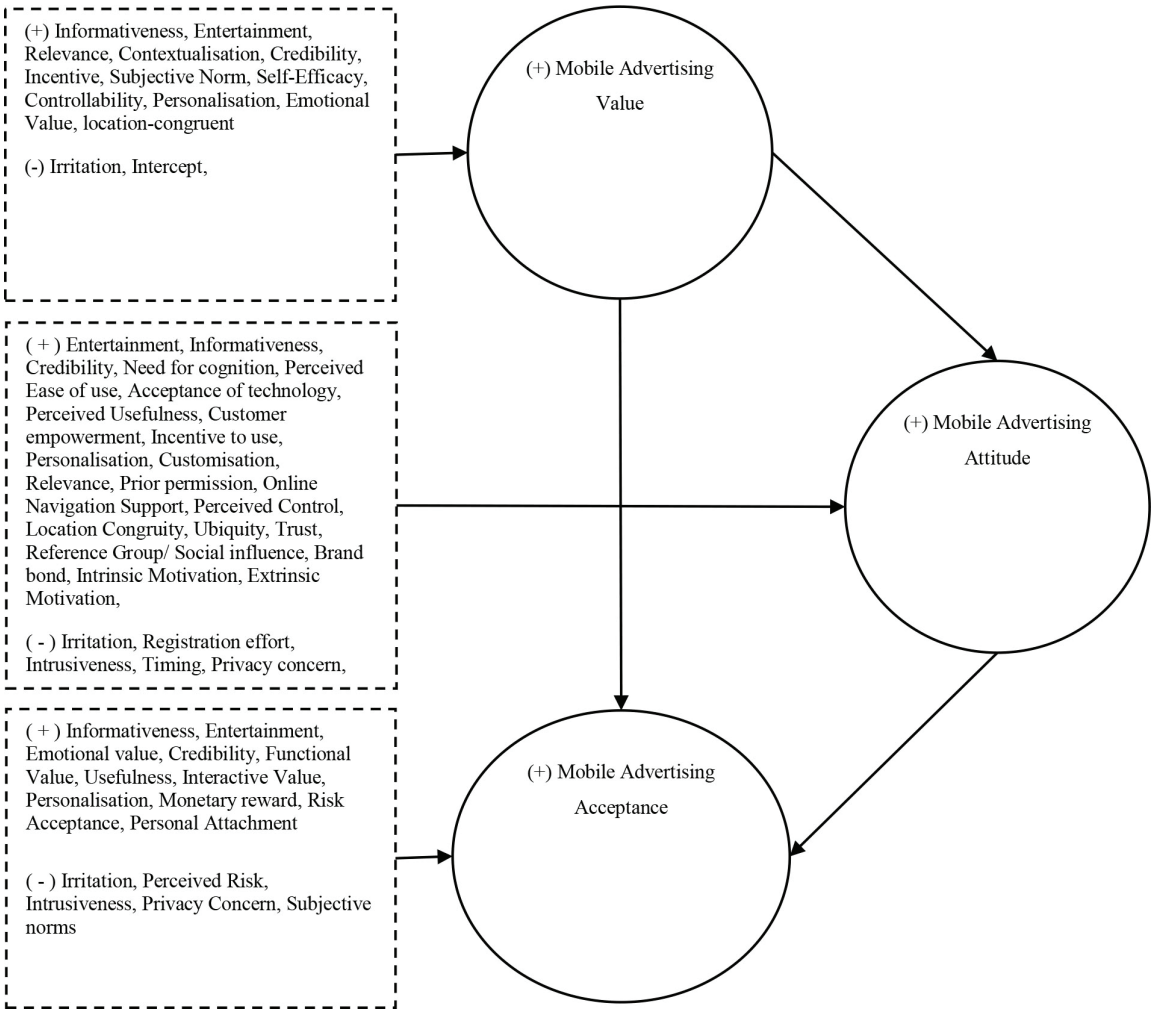


Figure 15: Nomological Network

Conclusion

The in-depth analysis of the 48 articles included in this review has made several meaningful contributions to the literature. First, the study has consolidated the knowledge of mobile advertising acceptance concerning mobile advertising types, uncertainty avoidance, and indulgence. Moreover, this study has developed a comprehensive conceptual model of the factors that determine mobile advertising value, attitude, and acceptance. Despite its strengths, there are certain limitations of this study. We might have missed some valuable knowledge because of the restricted database search since articles included in this study were from six databases relevant to a marketing publication.

It has also highlighted areas that require further knowledge. First, the existing literature covers the uncertainty avoidance and indulgence dimensions of culture sufficiently—however, we found very few studies from low masculinity and low power distance cultures. Secondly, reward-based advertising seems to be neglected among the mobile advertising types, although every other application offers perks for watching a few seconds of video advertising.

Moreover, previous research has established a pair-wise positive relationship between mobile advertising value, attitude, and acceptance. However, the studies have not empirically tested the serial causation or indirect effect on mobile advertising acceptance through mobile advertising attitude. In addition, the comparative studies so far have focused on age, countries, and other advert attribute comparisons. Future studies should also explore differences among personality types since one of the distinguishing features of mobile advertising is tailoring commercial communication to the mobile user. Another area requiring attention is the assessment of relative importance antecedent category. The studies have not formally categorized the antecedents and assessed their relative role in advert acceptance. Research should explore these contexts to increase the generalisability of the knowledge.

Statement of no-conflict of interests

We all authors confirm no relevant financial or non-financial competing interests to report.

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Market Forces
College of Management Sciences

Volume 17, Issue 1, June 2022
https://doi.org/10.51153/mf.v7i1.538

Impact of Strategic Ambiguity Tagline on Billboard Advertising for Consumers' Attention

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Abstract

It has become difficult for marketers to attract consumers to their ads and brands in the prevailing competitive world. Therefore, the marketers have adopted different advertisement strategies, including ambiguity in the tagline. It is an effective technique because it forces consumers to think about ambiguity in the tagline. Given its importance, we have developed a model that examines the impact of attitude, perception, and brand motive on ambiguity in the tagline. It also examines the moderating role of brand image on attitude and ambiguity in the tagline. The study has distributed 450 questionnaires to private business universities in Karachi and received 427 questionnaires. Using Smart PLS tested five hypotheses which our results and past study supports. The study found that attitude, perception, and brand motives significantly affect tagline ambiguity. Tagline ambiguity affects customer attention, and brand image moderates attitude and tagline ambiguity. Based on the literature and results, we recommend that marketers create ambiguity in their advertisement messages. Since it generates attention and consumers spend considerable time deliberating the real message behind the ambiguity. It also allows organizations the flexibility of changing their value propositions.

Keywords: *Attitude, tagline ambiguity, perception, brand performance, customer thinking.*

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Introduction

Billboard is not a new concept. In 1796 the printers created the first illustrated poster for advertisements. Subsequently, people started looking for suitable locations to install posters to attract customers' attention. The literature suggests that local merchants in the US ventured into roadside advertisements (Samanta, Woods & Ghanbari, 2009). These merchants installed the posters outside the telegraph office since it was a crowded place. Thus people used columns and boxes for mounting the posters. Advertisers since then have used innovative techniques to improve the effectiveness of the billboards. It is inclusive of three-dimensional and digital billboards (Wang, Yu, Guo, Yang, Ma, Liu, & Xiong, 2022).

Billboard is an effective tool for communication with consumers. Since its inception, marketers have brought many innovations in billboard advertising, including strategic ambiguity tags. Billboard is outdoor advertising, and marketers place it in those locations visible to pedestrians and motorists. Its communicative effect on consumers is significantly higher than other advertising mediums (Schirm, 2010; Zekiri, 2019). Marketers use ambiguous taglines to stimulate consumers' interest. It also allows firms flexibility in the offered value propositions (Pietsch, 2021; Schäfer, 2020). Researchers have not extensively studied this phenomenon even though organizations use tagline symbols and code, as they promote multiple interpretations and allow firms to achieve multiple goals (Johansen, Aggerholm & Frandsen, 2012). Firms use the symbols and logos encoded in high abstraction levels, and their interpretation is unclear unless consumers pay more attention (Nwankwo-Ojionu, Adzharuddin, Waheed & Khir 2021; Hoffjann, 2021).

Past studies have mostly focused on the effect of the location of billboards and found it significantly affects consumers' attitudes toward brand image (Marciano, 2020); Rahmat, Purnamawati, Saito, Ichwan & Lubis, 2019). Other studies examined the impact of colors and messages on consumers' attitudes and attention (Liyana Abdullah, & Sajarwa, 2021). Only a few studies have examined the antecedents of tagline ambiguity and its effect on attention consumption. Given this gap, the study has developed a conceptual framework with the following objectives.

1. To examine the impact of attitudes, perception, and brand motives on strategic ambiguity tagline
2. To ascertain the moderating effect of brand image on attitudes and strategic ambiguity tagline.
3. To measure the impact of strategic ambiguity tagline on consumers' attention.

Strategic Ambiguity

Researchers argue that open communication with clarity in the messages promotes consumers engagement and positively affects brand image perception (Tshuma, 2021). Similarly, Sundar and Cao (2020) believe that simplicity in the messages is critical for effective communication and such messages have a sustainable impact on consumers' memory. When a message in an advertisement has ambiguity and connotations that lack clarity, it refers to a strategic ambiguity message (Martin & Pajouh, 2019; Brown, McDonagh & Shultz, 2013). In contrast, many researchers believe that ambiguous and abstracted messages promote consumers engagement without restricting them to specific interpretations. Such messages allow firms to change their value proposition without changing their communication strategies (Marie-Cappelen & Strandgaard-Pedersen, 2021). Aurelia-Ana (2018) stresses that ambiguity in advertisements and tag lines enables firms to achieve multiple and contradictory organizational goals.

At the same time, such flexibility is not possible in simple messages and taglines. Deliberate ambiguous messages promote different interpretations of the same set of symbols. These messages can be targeted to a certain segment or across diverse segments (Gilliam, Muñoz, Jiménez, Kim & Kyle, 2021). Current research also documents that complexity in the meaning of advertisement messages captures target consumers' attention, leading to enhanced brand image (Juliana & Arafah, 2018). Many firms consistently use ambiguous messages to persuade consumers to develop positive purchase intentions toward brands (Hartati Panah & Matsom, 2021). Individuals infer the meaning of a message based on their perception. Thus, two customers may draw two meanings from one message (Lou, Tan & Chen, 2019). Many researchers argue that invariability and clarity apart from the message content also depend on the message's "senders and receivers" (Johansen, 2018). Past studies have documented how firms use multiple interpretations and goals to benefit organizations. For example, parties use ambiguous messages in their advertisement campaigns rather than giving a firm answer to past activities and commitment to plans (Smith, Atkin & Roznowski, 2006). Another study on print media advertisement found that ambiguity in the advertisement positively affected attitudes towards products and services (Oryila & Umar, 2016). Researchers believe many firms, through ambiguity in their messages, tend to misinform consumers, entertain consumers, evade truth, and make efforts to make their products or services more plausible than they are (Sánchez & Simour, 2021; Nasar, 2020).

Tagline

A tagline can communicate the brand personality attributes to consumers in a few words (Dirwan, Themba & Latief, 2021; Shahid & Ashfaq, 2021). The famous tagline of Nike is "just do it," and Apple is "think different- but not too different." Tag lines help

capture consumers' attention with catchy short sentences and communicate the value proposition to the target consumers (Munthe & Lestari, 2016). Thus a successful tagline immediately draws consumers' attention and promotes a sustainable relationship with the brands (Do, 2019; Dores, 2016). Successful tag line stimulates multiple interpretations in consumers, due to which they debate on varied meanings, leading towards brand engagement.

Given the importance of taglines, many advertisements use attractive and catchy taglines to increase their marketing share by retaining old ones and attracting new ones (Nurhayati, Hasanah, Kurniasi, & Rahmasari, 2018). The tag line reflects the brand and its activities and encourages consumers to patronize it. For example, many consumers would not mix with "Finger licking." "Medicine" or "non-edible products." Other famous tag lines explaining brands' usage are "everyone can fly" and "Life is good." Tur and Pratishara (2018) assert that tag line can be based on any geographical location and may not focus on engaging consumers in the product and services of the firm. Many researchers believe that taglines now always carry direct meaning and may have multiple interpretations (Juliana & Arafah, 2018), including "lexical and syntactic." Lexical relates to the length of words in the tag or slogan. At the same time, syntactic is the "organization and the procedure of parts of speech, which includes modifiers." (Cappelen & Pedersen, 2021).

Consumers' Attention

The visual theory assumes that consumers are attentive to advertisements aligned with their visual needs. The factors contributing to consumers' visual needs are the combination of stimulus and features in the ads (Km, & Subratha, 2021). Researchers also believe consumers' attention towards an ad varies from one consumer to another. For example, some consumers' attention approach is "top-down selection," and other consumers' selection is "bottom up-selection" (Jouttijärvi, 2019).

Kyllingsbaek (2006) extended Bundesen et al. (1990) theory of visual attention (TVA). The theory postulates that consumers process visual components in parallel sequence. At the same time, consumers place visual objects in their short-term and long-term memory (Sharma & Roy, 2021). Consumers' selection speed and priority for visual objects depend on "bottom-up" or "top-down." The researchers also believe that consumers process visual components in a serial format. They initially focus on the color, followed by font and size (Liu et al., 2018). Fox, Nakhata & Deitz (2019) suggest that sequential processing is slower than parallel processing. Parallel sequencing allows consumers to visualize several components concurrently. Consumers focus on one component in sequential processing and then on another.

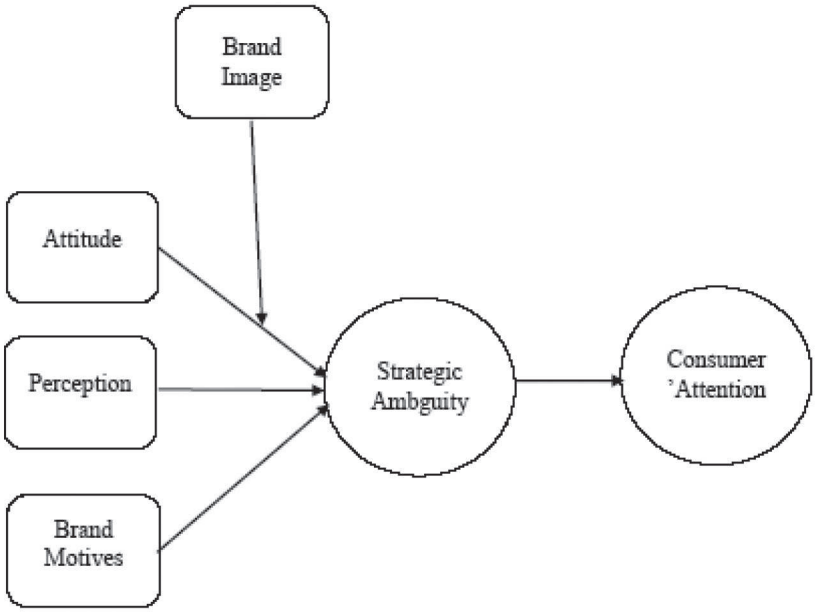

Figure 1: Conceptual Framework

Consumers' Attitude towards Taglines

Consumers' attitude to tagline is associated with the consumer's experience with the brand over a long period and from prior experiences about the brand, communications with the customers (brand connections), brand awareness, brand recall, and brand positioning. Ideally, attitude is a "proximal determinant" of comprehension (Khaola, Potiane & Mokhethi, 2014). The taglines are shorter or longer, but the research suggests the shorter tagline are more appropriate for mobile applications and browsers. The websites initially used the tagline "Don't sell my info," which many websites replaced with the tagline "Don't sell." Although the websites switched to the shorter version, they intended to communicate that they do not sell customers' information. Shortening the tagline became problematic as customers were unsure whether the intended message was that the websites do not sell personal information (Hong, Ng, Yusof & Kaliappan, 2021). Many studies have examined the impact of cultural differences on designs and tagline appeal (Xie, Mandel & Gardner, 2021). A cross-cultural study between Korea and the United States found that American brands are less dispersed than Korean brands. The study also found that the Korean tagline contains more valuable content than the American tagline (Liu, Sprott, Spangenberg, Czellar & Voss, 2018).

Marketers assert that taglines are a major tool for communicating the value proposition and reinforcing consumer memory and attention to the brand. Similarly, a

study in automobiles found that the brand tagline in this sector was more effective in changing consumers' attitudes than brand equity and brand association (Nayeem et al., 2019). The study concluded that brand credibility moderates the association between attitudes and tagline. Extant literature also suggests that the tagline's imperative sentences, personification, and metaphors significantly correlate with attitudes (Martin & Pajouh, 2019). Many studies, including Mantonakis (2012), have documented that "a brief pause between a tagline and brand increases brand name recognition and preference." Another empirical experiment documented that "encoding priming through a temporary delay or pause between meaningful stimuli like tagline and brand" promotes brand recognition (Septianto et al., 2020). Extant literature also suggests that incompleteness in the taglines promotes sentiments towards the brand and stimulates a sustainable relationship with it (Heberle & Gierl, 2020).

H1A: Consumer attitude significantly affects strategic ambiguity.

H1B: Brand image moderates the relationship between attitude and strategic ambiguity.

Perception towards Tagline

Consumers are generally less attentive to concurrent advertisements. Therefore marketers keep changing the advertisement without deviating from the core value proposition (Thapa, 2021). A tagline may communicate a certain message, but the conveyed messages significantly depend on consumers' perception of the stimulus in the tagline. Consumer perception of a tagline depends on its experience, brand image, and positioning. The extant literature documents a variation in the conveyed messages and how consumers have perceived them (Chatterjee, 2019; Cheema et al., 2016). The perception of a tagline depends on its sustainability and does not change frequently. Consumers must recall the tagline from a marketing perspective and associate it with the brands. Recalling a tagline and not associating with the brand is a profound weakness of the tagline (Gupta et al., 2020). Marketers create ambiguity in the tagline and advertisements by pausing the tagline words. This strategy promotes cognitive thinking in consumers as they deliberate and debate on the pause or sufficiency of the words in the tagline. The study presents two examples of ambiguity in the tagline. Volkwagen'slogan "Somewhere between tuxedo and birthday suit."This slogan does not communicate anything definite about the products but forces the consumers to form an association (Aichner, Coletti, Jacob & Wilken, 2020).

Similarly, the tagline of Apple's slogan is "Think differently, avoid using differently" (Niessen, 2021). The message motivates consumers to interpret what "different" relates to (Michalik & Michalska-Suchanek, 2016). The perception of discrepancy may

stimulate recognition later, but it may also promote "systematic memory errors under some circumstances (Mykola, Vadym, Lokutova, Anatoliy, & Romaniuk, 2020). Many researchers believe that the color used in the advertisement captures the audience and, despite the ambiguity in the tagline, communicates brand personality and promotes purchase intention (Pareek & Kumar, 2018).

H2: Consumer perception affects strategic ambiguity.

Brand Motives using Taglines

Marketers create and use taglines to "arouse, apprehend and achieve multiple goals for the organization." (Pareek & Kumar, 2018). The extant literature suggests that advertisers deliberately use ambiguity in the taglines to stimulate multiple interpretations. Strategic ambiguity "elucidates the framework of the sender's motives, message content and individual metamorphoses" (Asako, 2019). A high level of abstraction can promote multiple interpretations for seeking consumer attention. Nike's tagline "just do it" is an effective strategy for inspiring professionals and upcoming athletes to succeed in their careers (Penta, 2018; Mohan & Ferguson, 2020). Also, Nike aims is to maintain its social media presence with its tagline as it promotes Nike's brand and sales. Many past studies have documented that firms use suitable languages in their advertisement for the sustainable growth of their brands (Septianto, Seo & Zhao, 2021).

Sunder and Cao (2020) assert that consumers develop undesirable attitudes towards unbiased brands (Polite). At the same time, they develop positive attitudes when advertisements use biased language (less polite). Moreover, Zehra and Minton (2019) stress that advertisers should use religious cues by comparing Islam and Christianity in their advertisement messages. Firms use religious cues to target the selected audience and spread shared respect for "God."

H3: Brand motive significantly affects strategic ambiguity.

Impact of Strategic Ambiguity Tagline

Taglines in Advertisements promote brand identity, enhance brand awareness, stimulate curiosity and give a competitive edge over competitors (Michalik & MichalskaSuchanek, 2016). Many researchers, including Dirwan et al. (2021), have documented that ambiguous taglines have a favorable and significant impact on consumers' attention and purchase intention. Brand attention and brand recall are precursors of purchase intention. Therefore they are of strategic importance, and according to many researchers, ambiguous taglines help achieve them. Boxman-Shabtai (2020), Devarai and Shetty (2010) undertook a study in the non-alcoholic beverage

segment on the taglines and their impact on consumer recall and brand awareness. The study concluded that firm' changing their messages in the taglines decreases brand awareness and recall. At the same time, firms with persistent and consistent messages in the taglines enhance brand recall and brand memory. These findings in our opinion contradict the literature that suggests that consumers receiving the same messages over a while pay less attention to them. Thus we argue that the marketers should change the messages without deviating from the main theme of their value proposition unless firms have changed their value proposition. One of the advantages of ambiguity in taglines is that they sublimely work in the mind of consumers, and it has no contingent on being consumers' favorite brand (Dhanyasree & Kumar, 2018). In a study on Kit Kat, Cheema et al. (2016) found that taglines do not significantly affect brand perception, but they promote a strong brand association. Munthe and Lestari (2016) examined the impression of "rhetorical devices in Wendy's taglines." The study found a strong association between words, phrases, and polysemy in taglines and audiences appeal. Thus, many fast foods use phrases and polysemy in their tagline. Some successful taglines of fast food are as follows. Mcdonald's tagline is "I am loving it." Burger king's tagline is "Be Your Way" (Lee, 2017; Kohli, Thomas & Suri, 2013). These are the perfect examples of successful ambiguity taglines. Both these taglines do not explicitly state "Burger."

H4: Strategic ambiguity affects consumers' attention.

Methodology

Participants

The study focuses on private business students in Karachi. We have focused on this segment because these students know the concepts related to the subject study. This knowledge allows them to understand the subject's complexities, and we believe their inputs bring more insight to the issue. The study has calculated the sample size based on a 95% confidence level and 5% margin of error, which comes out to 387. The calculated response rate for the study is about 95%, which is appropriate for consumers' related studies.) response rate can decrease the collected sample; therefore, we, through enumerators, have distributed 450 questionnaires and received 427 questionnaires. The profile of the respondents is as follows. Of the total respondents, 57% for females, and 43% were males. Marital status suggests that 27% of the respondents were married, and 73% were single. In terms of employment, we found that 20% of the respondents were working full-time, 25% were doing part-time jobs, 10% were entrepreneurs, and the rest were full-time students. We found that 55% of the respondents pursue MBA and 45% BBA degrees in education.

Measures

We have adopted the questionnaire from earlier studies. The constructs, sources, numbers of items, and reliability values in past studies are depicted in Table 1. All the items used in the study were based on a rating scale of 1-5 (1=highly disagree, and 5=highly agree), excluding demographic questions, which were based on a nominal scale.

Table 1: Constructs

Constructs	Sources	Reliability in Earlier Studies	Number of Items
Attitudes	Dahlen and Rosenberg (2005)	0.730 to 0.816	3
Brand Image	Low and Lamb (2000)	0.831to 0.879	5
Brand Motives	Smith, Atkin and Oznowski (2006)	0.828 to 0.845	4
Consumers' Attention	Thorson et al. (1992)	0.795 to 0.880	4
Perception	Henderson, Giese and Cote (2004)	0.733 to 0.879	10
Strategic Ambiguity	Dores (2016)	0.763 to 0.809	4

Data Analysis

We used Smart PLS because it gives the model predictive power compared to other software. The data analysis used in the study includes reliability, validity, discriminant analysis, and the model's predictive power. Also, we have generated a structural model for hypothesis results

Results

We have initially generated a measurement model using the Smart PLS version. The model is presented in Figure 2, and other related results in the subsequent section.

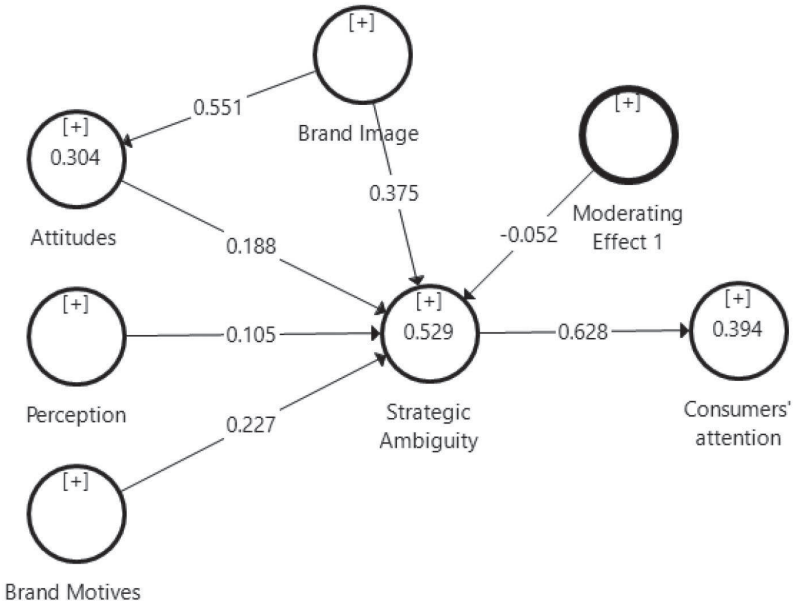

Figure 2: Measurement Model

Descriptive Analysis

In Table 2, we have presented the results related to descriptive analysis, including internal consistency analysis and univariate analysis.

Table 2: Descriptive Analysis

	Cronbach's Alpha	Mean	Std. Dev.	Skewness	Kurtosis
Attitudes	0.802	4.010	0.961	-1.963	1.121
Brand Image	0.786	3.528	0.945	-1.585	2.024
Brand Motives	0.856	3.529	1.102	1.588	2.390
Consumers' Attention	0.814	3.591	0.974	1.445	1.139
Perception	0.780	3.792	1.117	1.933	-1.553
Strategic Ambiguity	0.809	3.885	0.992	1.623	-1.890

The results suggest that Cronbach's Alpha values range from 0.802 to 0.856. The lowest Cronbach's Alpha value is for perception (Mean= 3.792, SD= 1.117, α=0.780), and the highest is for Brand Motives (Mean= 3.592, SD= 1.102, α=0.856), suggesting that the constructs used in the study have acceptable internal consistency on the data set collected from Karachi (Flatt & Jacobs, 2019). The results also support univariate normality since all the Skewness values ranged from -1.585 to -1.963, and the Kurtosis

values ranged from 1.121 to 2.390 (Knief & Forstmeier, 2021).

Convergent Validity

The study assessed the convergent validity "based on AVE and composite reliability values." And we have used Fornel and Larcker's (1981) criterion for discriminant values. The study has summarized the results in Table 3.

Table 3: Convergent and Discriminant Validity

	AVE	Composite Reliability	AT	BI	BM	CA	P	SA
Attitudes	0.802	0.871	0.793					
Brand Image	0.786	0.849	0.551	0.729				
Brand Motives	0.856	0.912	0.577	0.509	0.881			
Consumers' Attention	0.814	0.876	0.448	0.668	0.356	0.8		
Perception	0.780	0.855	0.318	0.537	0.339	0.472	0.062	0.772
Strategic Ambiguity	0.809	0.875	0.562	0.65	0.569	0.628	0.088	0.44

Carslon and Herdman (2012) suggest that for convergent validity, AVE values of the constructs should be greater than 0.50, and composite reliability should be at least 0.70. Since our results meet these criteria, it is safe to assume that the constructs converge on the present data set. Moreover, our results also fulfill Fornel and Larcker's (1981) criteria suggesting that the used construct is unique and distinct.

Confirmatory Factor Analysis

The study has used CFA to find a theoretical association between latent and indicator variables. The results presented in Table 4 show that all the factor loadings are greater than 0.70 suggesting a significant association between the constructs.

Table 4: Confirmatory Factory Analysis

	Attitudes	Brand Image	Brand Motives	Consumers' Attention	Perception	Strategic Ambiguity
AT1	0.706					
AT2	0.75					
AT3	0.875					
BI1		0.614				
BI2		0.708				
BI3		0.769				
BI4		0.789				
BI5		0.752				
BM1			0.87			
BM2			0.915			
BM3			0.858			
BM4			0.786			
CA1				0.851		
CA2				0.771		
CA3				0.807		
CA4				0.768		
P1					0.75	
PI2					0.775	
PI3					0.829	
PI7					0.73	
PI8					886	
PI10					701	
SA1						0.726
SA2						0.839
SA3						0.838
SA4						0.784

Predictive Power of the Model

Smart PLS can assess the model's predictive power through R-squared and Q-squared values. The study has used the same and presented summarized results in Table 5 and Table 6. The tables show that all the R^2 values are greater than 0.25, and Q-squared values are greater than 0.00, suggesting the model has adequate predictive power.

Table 5: R Squared Values

	R Squared	Adjusted R Squared
Attitudes	0.304	0.303
Consumers' Attention	0.394	0.394
Strategic Ambiguity	0.529	0.527

Table 6: Q-Squared Values

	SSO	SSE	Q^2 (=1-SSE/SSO)
Attitudes	4792	3892.744	0.188
Brand Image	5990	5990	
Brand Motives	3594	3594	
Consumers' Attention	4792	3643.123	0.24
Perception	4792	4792	
Strategic Ambiguity	4792	3198.754	0.332

Model Fit Indices

The study has used four commonly used fit indices to assess the model's fit. Results presented in Table 7 suggest that the model fit is adequate. As SRMR values are lesser than 0.08, and NFI values are greater than 0.80, it suggests that the model fits adequately.

Table 7: Model Fit Indices

	Saturated Model	Estimated Model
SRMR	0.095	0.115
d_ULS	2.688	3.934
d_G	0.661	0.738
Chi-Square	4667.613	5010.739
NFI	0.705	0.683

Structural Model

The study has used bootstrapping for generating the structural model results. The results are presented in Table 8, and the structural model in Figure 3.

Table 8: Structural Model Results

	Beta values	P Values	Results
Attitudes -> Strategic Ambiguity (H1A)	0.188	0.000	Accepted
Moderating Effect 1 -> Strategic Ambiguity (H1B)	-0.052	0.003	Accepted
Perception -> Strategic Ambiguity (H2)	0.105	0.000	Accepted
Brand Motives -> Strategic Ambiguity (H3)	0.227	0.000	Accepted
Strategic Ambiguity -> Consumers' attention (H4)	0.628	0.000	Accepted

Our results support all the hypotheses. We also found that the strongest impact was on the association between strategic ambiguity and consumer attention (β=0.628), and the lowest impact was on the association between the moderating effect of brand image on attitudes and strategic ambiguity.

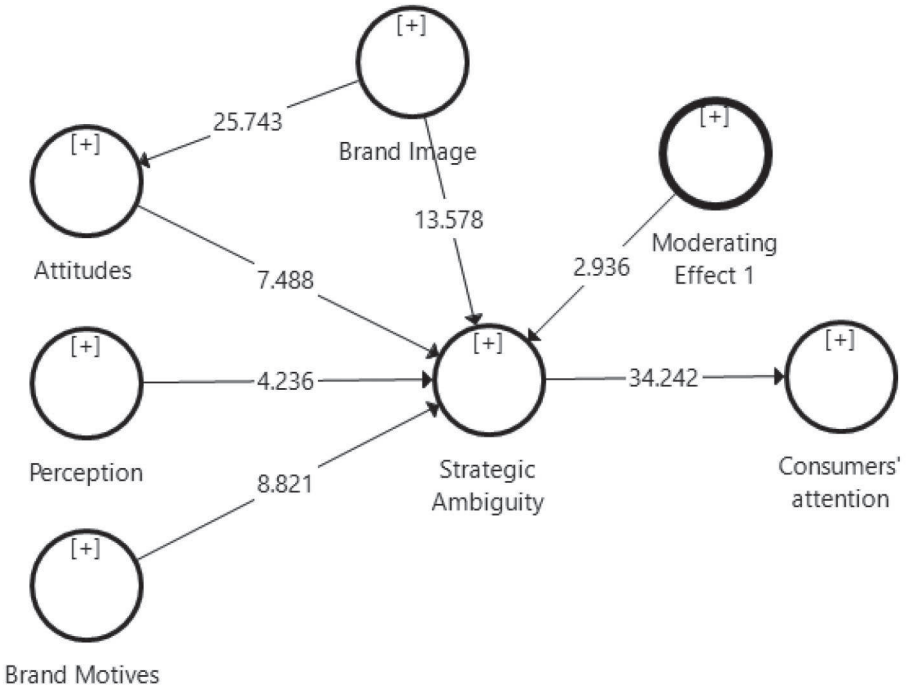

Figure 3: Structural Model

Discussion and Conclusion

We have discussed the results and their relevance to the past literature in the following sections.

The study found that consumer attitudes have significantly affect ambiguity, and brand image moderates the attitudes and ambiguity in the tagline. The study has validated the earlier studies of Nwankwo-Ojionu et al. (2021), and Liu, Sprott, Spangenberg, Czellar and Voss (2018). Marketers assert that taglines are a major tool for communicating the value proposition and reinforcing consumer memory and attention to the brand. Similarly, a study in automobiles found that the brand tagline in

this sector was more effective in changing consumers' attitudes than brand equity and brand association (Nayeem et al., 2019). Extant literature also suggests that the tagline's imperative sentences, personification, and metaphors significantly correlate with attitudes (Martin, 2019). Many studies, including Mantonakis (2012), have documented that "a brief pause between a tagline and brand increases brand name recognition and preference."

The study has extended earlier studies that found perception significantly affects tagline (Chatterjee, 2019; Cheema et al., 2016). Consumers are generally less attentive to concurrent advertisements. Therefore marketers keep changing the advertisement without deviating from the core value proposition (Thapa, 2021). Consumers must recall the tagline from a marketing perspective and associate it with the brands. Recalling a tagline and not associating with the brand is a profound weakness in the tagline (Gupta et al., 2020). Marketers create ambiguity in the tagline and advertisements by pausing the tagline words. This strategy promotes cognitive thinking in consumers as they deliberate and debate on the pause or sufficiency of the words in the tagline. The study presents two examples of ambiguity in the tagline. Volkwagen'slogan "Somewhere between tuxedo and birthday suit."This slogan does not communicate anything definite about the products but forces the consumers to form an association (Aichner, Coletti, Jacob & Wilken, 2020).

Our results support the association between brand motives and tagline, which are in line with the earlier literature (Penta, 2018; Septianto, Seo & Zhao, 2021). Marketers create and use taglines to "arouse, apprehend and achieve multiple goals for the organization" (Pareek & Kumar, 2018). The extant literature suggests that advertisers deliberately use ambiguity in the taglines to stimulate multiple interpretations. Strategic ambiguity "elucidates the framework of the sender's motives, message content and individual metamorphoses" (Asako, 2019). A high level of abstraction can promote multiple interpretations for seeking consumer attention. Nike's tagline "just do it" is an effective strategy for inspiring professionals and upcoming athletes to succeed in their careers (Penta, 2018). Also, Nike aims is to maintain its social media presence with its tagline as it promotes Nike's brand and sales. Many past studies have documented that firms use suitable languages in their advertisement for the sustainable growth of their brands (Septianto, Seo & Zhao, 2021).

Conclusion and Implications

Based on the sample of 427 students from Karachi business universities, the study tested five hypotheses, which the results and past literature support. The study found that consumer attitude is a significant antecedent of consumer attention. And consumers'

attitudes, perceptions, and brand motives significantly affect tagline ambiguity. The study also found that brand image moderates attitude and strategic ambiguity. Given the highly competitive markets, consumers are exposed to hundreds of stimuli every day. Marketers use different mediums to gain consumers' attention, including billboard advertising. Extant literature suggests billboard advertising, compared to other mediums, is more effective. Generally, marketers place their billboards in prominent places with high vehicular and pedestrian traffic. Based on the literature and results, we recommend that marketers create ambiguity in their advertisement messages. Since it generates attention and consumers spend considerable time deliberating the real message behind the ambiguity. It also allows organizations the flexibility of changing their value propositions.

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Market Forces
College of Management Sciences

Volume 17, Issue 1, June 2022
https://doi.org/ 10.51153/mf.v7i1.544

Challenges of Change Management in Organizations: Systematic Narrative Review

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Abstract

The study revisits past research papers on the importance of organizational change (OC) and change management (CM). Effective CM is necessary for organizations' growth and sustainability in the competitive market. The existing literature suggests that researchers have conflicting views on CM theories and empirical evidence. Given these discussed conflicts, this study provides a systematic narrative review of organizational CM. In addition, it identifies the challenges faced by organizations during the implementation of change. Further, this study also highlights the suggestions for further research. To overcome CMfirms should promote communication because it bridges the gap between employees and managers. Managers should design a reward system for employees who accept the change happily in organizations. If employees view the ideal process rather than an interruption, the transition period may be smoother. This research has focused on re-examining the literature on OC. Future research should expand the types of changes and change methods.

Keywords: *Narrative review, change management, systematic review, organizational culture, organization change.*

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Introduction

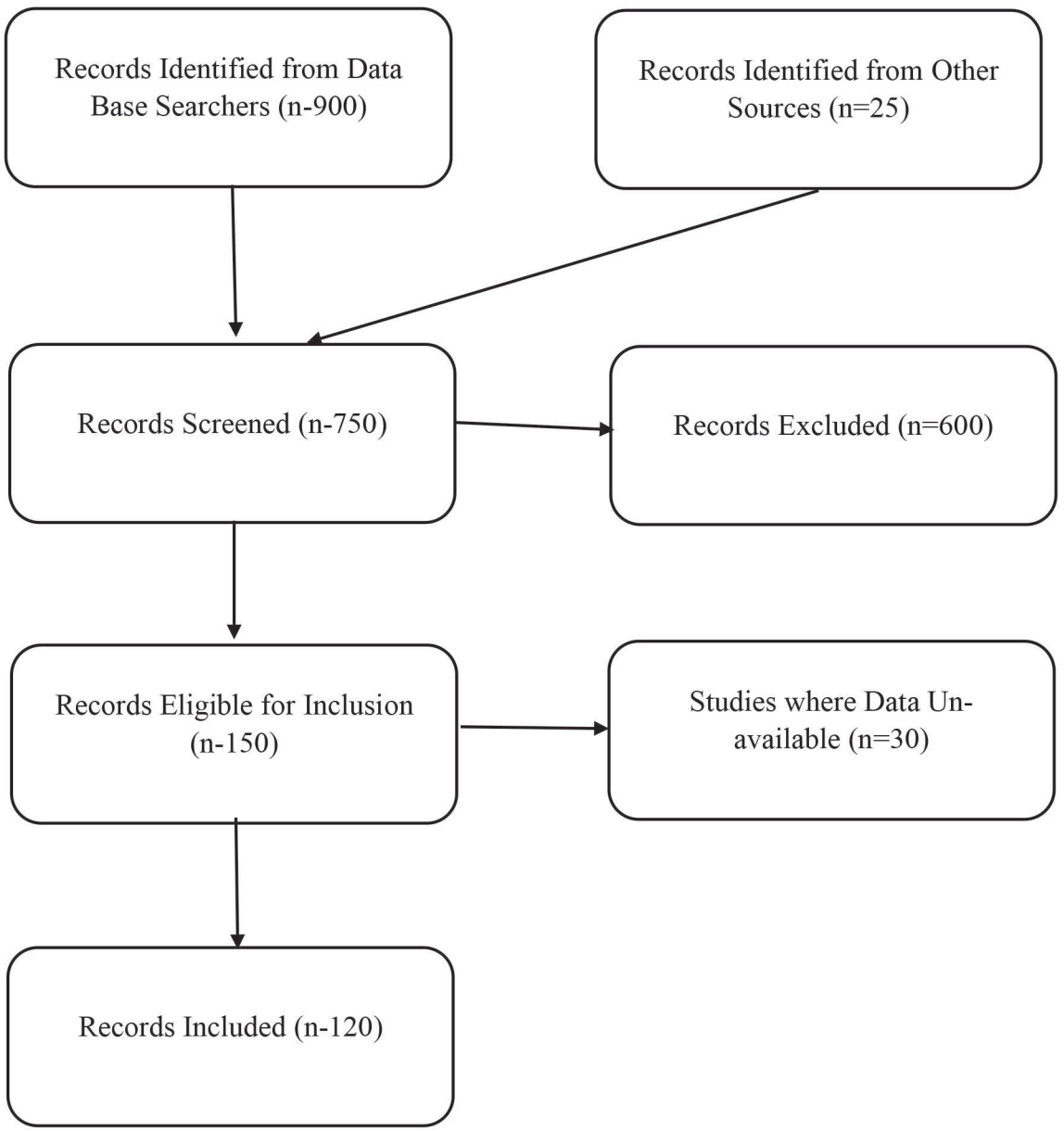
CM is a comprehensive way to change or develop an organization's strategies, practices, or technologies (Will & Mueller 2019). It is a process that guides preparing, training, and supporting individuals to implement transitions to accomplish organizational goals (Paton & McCalman 2008; Bv, 2005). Thus, CM aims to introduce strategies to bring about and regulate changes and help people respond positively to change (Lauer, 2010). CM process allows employees to align current resources within the organization. At the same time, it allows organizations to assess the general effect of a change. Firms can enhance their productivity and effectiveness by aligning the business process with current and future requirements (Galli, 2018). Employees' empowerment and understanding of the change process improve productivity and efficiency (Kho, Gillespie & Martin-Khan, 2020). Edmonstone (1995) asserts that an efficient CM process decreases the volatility of CM. It also creates opportunities to promote best practices, develop leadership, and establish teams (Paton & McCalman, 2008). Effective CM promotes a smooth transition from the old to the new while maintaining morality, productivity, quality of labor, and enhancing the corporate image. Petronio and Child (2020) assert that an efficient CM process increases communication with all stakeholders, resulting in stakeholder confidence.

Organizations are an integral part of modern businesses with complex social structures that help solve interconnected problems and achieve organizational goals and objectives (Lozano, Carpenter & Sammalisto, 2020; Colsen, 2018). The main goal of organizational change, which is usually an anticipated, scheduled, and regulated opportunity, is to transition from an existing status quo to a better state. Organizational reforms involving a shift in the status quo often face resistance from the various hierarchical organizational levels (Lozano et al., 2020). The study's main purpose is to identify the critical factors to successfully manage change within public and private sector organizations(Will & Mueller, 2019). The study used a systematic narrative review to achieve the above objectives discussed in the following section.

Methodology

The study has used a systematic narrative review method. More than one hundred (100) academic papers have been descriptively reviewed in this study. A descriptive narrative literature review is a non-systematic review. Unsystematic narrative analysis or story diagrams are the full narrative renovation of previously published information (Moher et al., 2015; Pawson et al., 2005). A narrative review is a valuable contribution to literature for research scholars if properly organized (Whittemore & Knafl, 2005). The study has presented the adopted review process in Figure-1 (MARS).

Figure 1: Literature Search Diagram



This study has adopted the following steps. Initially, the study searched for existing reviews and identified relevant variables for search (Khan et. al., 2003). Then it formulated specific research themes and designed a conceptual framework and search strategy. It identified the relevant studies by searching leasing databases. And finally, the study has interpreted the findings and prepared a detailed report on all aspects of CM and O.D. (Whittemore & Knafl, 2005).

The study has specifically focused on the following journals: Journal of Organizational CM, The International Journal of Strategic CM, Journal of Strategic Leadership, Journal of Management and Change. The study searched several databases, including Emerald Insight, National Digital Library, Elsevier, Springer, Sage, and Taylor and Francis. While reviewing the articles, we have mainly focused on the CM process, barriers to implementing changes, strategies, and models related to CM.

Literature Review

Several studies have emphasized the value of change, proposed ways of approaching it, and proposed hypotheses and solutions (Guimaraes & Armstrong, 1998). Based on the above-discussed methodology, the study summarized the factors related to organizational change and theories in the following sections.

Today's World of Change

Change is necessary for the growth and sustainability of organizations. It is an ongoing process. The organizational improvement depends on different exchange models, discussed in the latter part of the review. Such models are valuable for organizations (Love et al., 2000). In this era, organizational leaders align the changes with the new business requirements. For such changes, they need an appropriate model. When a firm implements changes by following due process sends positive messages to employees and stakeholders.

Types of OC

According to Senior and Fleming (2006), the three basic types of OCs are developmental, transitional, and transformational change. Developmental change strengthens the processes and procedures already developed (Romanelli et al., 1994). Transitional change is the type of O.C in which organizations switch from their present state to a new state for problem-solving, such as financial services and optimization (Clark et al., 2010). Ackerman (1986) asserts that transitional change is the simplest that focuses on improving the existing way of doing things, doing more, or doing things better. While transformational change is linked to change that significantly changes the organizations' culture (Brown & May 2012). Transformational change is more complicated

than the first, which is based on the reorganization or dismantling of outdated operating methods to implement a known new state. This planned change accounts for a small, gradual change. It is believed that transformed changes are the most challenging since it is more significant and more stressful because it is implemented and executed in a very short period

Challenges of CM

CM is an essential factor for an organization's success and sustained growth (Hoffman, 1999). According to Akgün (2007), the need for change is often unpredictable, and it tends to be reactive, discontinuous, and often implemented in an organizational crisis (Dumitriu, Meşniţă & Radu, 2019). Organizations implementing a CM plan from the ground up often face challenges. Some of them are discussed in the following section.

Communication

Organizations often fail to implement CM strategies successfully due to a lack of communication (Jones et al., 2004). Lack of communication with the stakeholders adversely affects the organizational change process. CM process requires extensive communication with all the stakeholders using multiple channels of communication (Kovaitė, Šūmakaris, & Stankevičienė, 2020). To manage change successfully in the organization, the manager should use different communication strategies. It also included speaking, writing, recording, training, focus groups, newsletters, intranets, and more about the transition. There is no organization where workers are fully satisfied with the communication, which is one of the most challenging problems in organizations (Allen et al., 2007).

Leaders are responsible for communicating correct information to employees. It allows employees to know about the organization's decisions, goals, and progress and make CM more effective (Gilley, Gilley, and McMillan, 2009). Incorrect information can destroy leaders' credibility about the changes. Altamony et al. (2016) asserts that if the goal and objectives of the CM are clear to the employee, it will create ambiguity leading to slow the process of organizational change. Involving employees in the change process increases their support for change management and stimulates their commitments (Bell & Raj, 2016; Johansson & Heide, 2008).

Proper Planning and Employee Morale

OC requires proper and systematic planning. According to Berry (2007), organizational planning relates to setting goals and aligning the resources to achieve OC goals. Lack of proper planning in OC adversely affects the implementation of the change process (Van Woerkum, Aarts, & De Grip, 2007).

Employees often have a negative perception of change management. They are not sure whether the new changes are employees friendly or not. This apprehension adversely affects their morale and enhances resistance to change management (Misch, 2017). Such uncertainties adversely affect employee productivity and performance. (Kaehr Serra & Thiel, 2018). At the same time, if employees believe is that the new changes are favorable to them, they would cooperate with the management to implement OC (Prottas, 2013). Sharing the organizational change policies with the employees increases their confidence in management and positively affects their morale. Employees' confidence and morale are essential precursors to OC (Misch et al., 2017; Kaer-Sirra, Thiel, 2018).

Lack of Consensus

Identifying shared goals helps in reaching consensus. For example, employees may want to know whether the organizational change would affect work-life balance adversely if they believe that the change will not, and their cooperation towards OC will increase (Galli, 2018). Firms planning OC changes must anticipate the employees' common questions and prepare themselves for the questions (Kho, Gillespie & Martin-Khan, 2020). Employee queries could be what they on different aspects of the proposed changes. Some changes employees may like while they may not. They may be worried about how the changes may affect their role. If a firm satisfactorily addresses these questions, they would have consensus and cooperation on the OC

Technical Growth

Technological development can adversely affect an organization's whole workflow (Margulies & Raia, 1972). Specialized software, on the one hand, promotes efficient workflow. On the other hand, it is difficult for organizations to incorporate emerging technologies into existing systems (Chege, Wang & Suntu, 2020). Organizations can prevent this by building a network of early learners who share it with other employees (Davidson, 2006). Another challenge is to motivate employees to learn and apply these skills at work.

An organization needs two types of users for using software-related technology: front and back-end users. Most firms have software engineers who can often be efficient back end-users. The non-technical employees in H.R., management, and marketing are front-end-user. Developing technical skills for front-end users is challenging for firms (Galli, 2018). If employees do not learn modern technical skills, modern technology tools incorporated by firms would be of no use (Chege, Wang & Suntu, 2020).

Communication

Employees understand and observe what is happening in an organization. When management does not take employees in confidence and communicate with them, it promotes uncertainty and ambiguity. Consequently, these factors develop a perception in the employees that they are not part of the decision-making (Petronio & Child 2020). Thus the management should keep employees well informed about the plan and progress of OC Successful managers engage all employees in the change process through seminars or brainstorming sessions (Jones et al., 2004). Communication with employees aims to take them in confidence, attend to their queries related to OC, increase their engagement and cooperation, and remove barriers that may slow down the OC process (Kho, Gillespie & Martin-Khan, 2020).

Leadership

Leadership is important for implementing OC smoothly and successfully (Tang, 2019). Organizational leadership plays a vital role in establishing direction, promoting change, and implementing OC in an organization. Based on empirical evidence, Balogun and Hope Hailey (2004) found that one of the most important reasons for failure to implement changes is the lack of strong leadership. Leaders help employees build the capabilities and skills necessary for organizational change (Vakola & Nikolaou, 2005). They also inspire and motivate employees to understand the necessity of OC Leaders also make the employees realize that OC benefits firms and them (Guimaraes & Armstrong, 1998).

Employee Resistance

Avey et al. (2008) asserts that employee resistive behavior challenges, undermines, or subverts OC implementation. Most employees resist OC due to uncertainty in their future roles. They are concerned about job security as well (Chalakani, 2020). During the OC process, employees' productivity decreases, which delays the implementation of systematic changes (Furst & Cable, 2008). Resistance is a reactive response to management control (Burnes, 2004). It arises because employees perceive that OC may be unfavorable to them.

Organizational Change versus Organizational Transformation

OC is also known as organizational development (Ding & Nguyen, 2016). The important areas of OC are (i) Simultaneity of change, (ii) Speed of exclusive change, (iii) Complexity of change, (iv) Direct communication and impact of change on the world, (v) Ability to make appropriate leaders and individuals in the organization to select and respond to problems, problems, and solutions (Hayes, 2018). In addition to contemporary and evolutionary changes, the changes are also very different in integration and radical

communication (Waddell et al., 2004).

Fundamental change refers to major changes that transform an organization completely (Todd, 1999). Two important aspects of transformational changes are how OCs occur and how unexpected it is. Regardless of its pace, OC is a movement of an organization from a static state to a desired dynamic state to improve its performance and effectiveness (Buchanan & Badham 2020).

A fundamental change often revives an organization (Senior and Fleming 2006). In addition to adopting incremental strategies, organization leaders also adopt intensive/ thorough change methods. Firms concurrently and continuously learn innovative business processes in this method (Olsen, 2018). Leaders change their organizations by formulating (and deploying) new visions, missions, values, aspirations, strategies, and structures. These new visions, tasks, values, aspirations, strategies, and structures translate into ongoing changes resulting in the organization's transformation. In other words, to a certain extent, the transformed organization will continuously adopt developing technology and may push innovation to a new level. Organizations transform under the impetus of macro-environmental forces and technological, financial, and political changes (Pryor et al., 2008).

CM Models

Many change models are available that guide and provide a framework to implement major organizational changes (Mento, Jones, & Dirndorfer 2002). A few we have discussed in the following sections.

ADKAR Model

This model was developed as a practical tool by Hiatt in 2003 and was introduced by Prosci, a well-known center for learning and management of change (Hiatt, 2006). This model helps employees in the organization to understand the importance of change (Shah, 2014). The model highlights the positive aspect of change. The leaders also use this model to identify the aspects of successful changes and how to implement them with the help of employees (Wong et al., 2019). ADKAR is a CM model that focuses on specific business outcomes and assesses the organizations' desired outcomes. It also provides a protocol for communicating and training approaches in an organization. The drawback of this model is that it lacks clarity in defining the position of leadership and process principles (Shah, 2014). Besides this, it also provides the dimensions to change and offers a checklist for changing management. Therefore the ADKAR model is an effective tool for planning to change, diagnosing deficiencies, formulating corrective actions, and supporting managers and supervisors (Hiatt, 2006).

Kurt Lewin Model

This model asserts that an organization's culture is essential to understand and implement the change (Burnes, 2004). At the same time, Burnes (2004) believes that this model is the driving for of OC The three-stages for implementing change in the organization are refreezing, changing, and freezing. The first phase of change prepares an organization to break up the current business process before applying new operations (Schen, 1996). The strategy for this action is to send out a clear message describing why a new way of doing things is essential (Hussain et al., 2018).

According to Gilley et al. (2009), leaders need to highlight the poor financial conditions, customers dissatisfaction, and poor organizational performance. And emphasize the need to improve the organizational business process (Galli, 2018). All these discussed factors would generate a powerful drive to implement change (Kho, Gillespie & Martin-Khan, 2020). These measures may promote cognitive thinking in the employees leading to the successful implementation of OC (Merrey et al., 2018). To shift to the change phase takes time to adapt and active participation. When subordinates accept and understand the changes are beneficial for them and the organization, their cooperation increase. This process needs superiors and the company's support (Schein, 1999). The main factors for refreezing include a cohesive structure and consistent work requirements. Consequently, subordinates may be more satisfied with the new work style. Even if the change is constant in many organizations, the phase of refreezing is important. The last phase of change is freezing. The subordinates at this stage fall into a transition trap where they are not sure what to do (Hussain et al., 2018). This model also focuses on the internal and external forces that stimulate change and those that inhabit OC (Levasseur, 2001; Muñoz-Torres et al., 2019).

Kotter 8-Step Change Model

Kotter (1995), based on his experience of change management in hundreds of organizations, presented a change model. His model, known as the mind mapping diagram, is depicted in Figure 2.

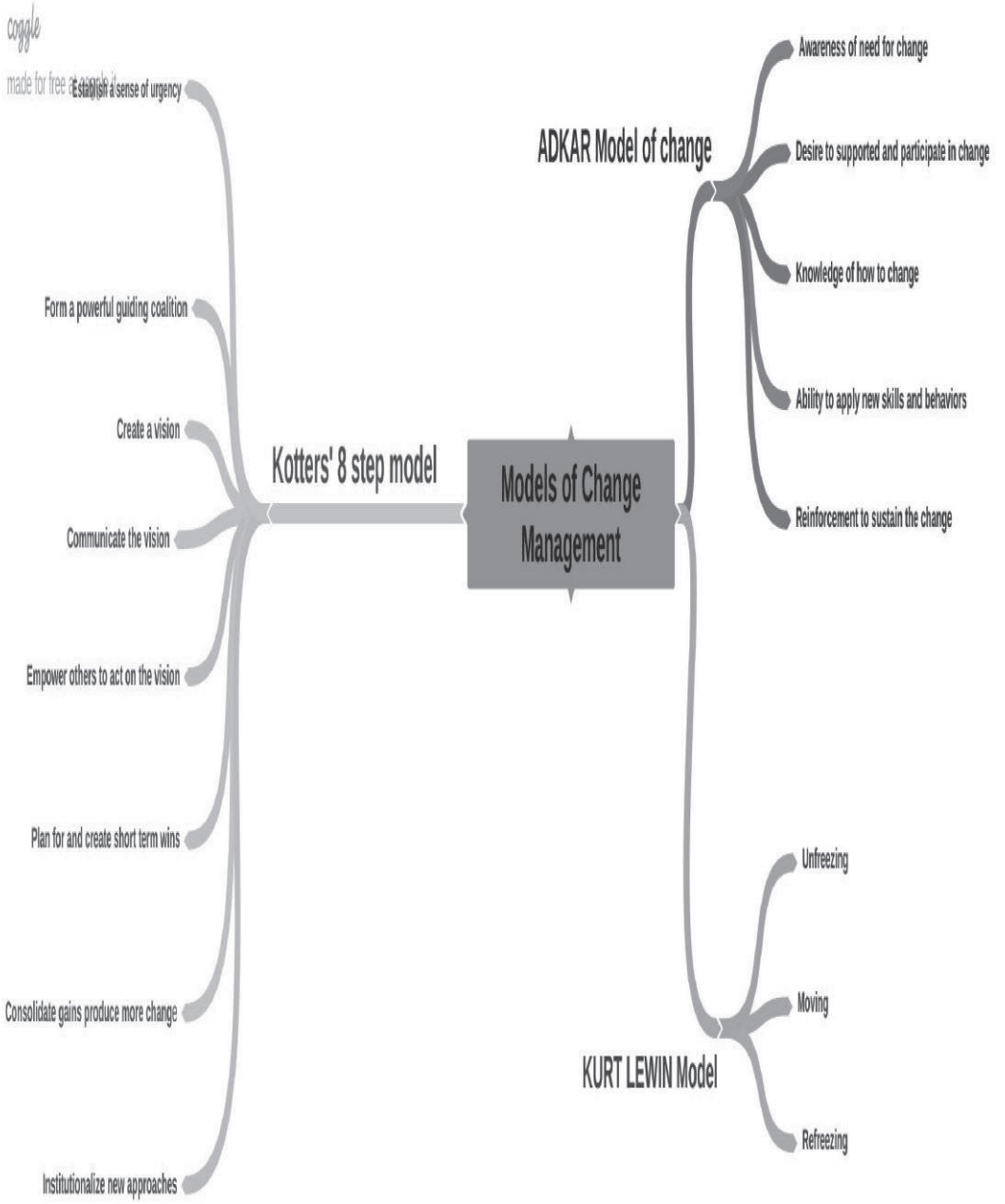


Figure 2: Mind Mapping Diagram

Kotter (1995), based on experience, asserted that organizations face many challenges while implementing change. He believes that the theoretical aspects of the process of CM align with the "vision" of the process of change. The disparity between complacency and urgency is one of the reasons for the failure of change (Kotter, 1995). Organizations, due to complacency, often underestimate the importance of OC, which reduces employees' commitment to change (Berger & Luckmann, 2007; Apostolopoulos et al., 2016; Pawson et al., 2005).

Kotter (1995) asserts that leadership in an organization must develop relevant skills to implement organizational change effectively. A clear vision helps in decision-making and allocation of resources for future change. The vision aims to change and inspire employees to participate in OC (Gupta, 2011). Moreover, coordination between change agents and employee behavior helps acquire relevant knowledge for implementing OC Employees' low awareness of a firm's vision suggests poor communication with the stakeholders (Langer & LeRoux, 2017). Appelbaum et al. (2012) believes that organizational culture is critical in OC and employees' attitudes and behavior toward change. Many past studies have concluded that leadership and organizational culture foster change (Langer & LeRoux, 2017; Graetz, 2000; Robert, 2001).

Conclusion

The business environment is dynamic, demanding changes in the organization's business process. Organizations for growth and sustainability must incorporate the required changes from the dynamic business environment (Waddel et al., 2005). This article reviewed the literature on OC and integrated the existing methods for managing change. Many past studies have emphasized that firms cannot survive without changing their business process. The change is an ongoing process and will continue in the future. To achieve the transformation goals in an organization, employees and leadership can adopt a systematic approach, which is also called the CM process. For implementing the CM process, firms must keep themselves updated on the new and updated modern technologies. It is important to plan for changes and address the key factors that lead to success. OC helps firms gain a competitive advantage. CM also improves the effectiveness of strategic plans and strategies and enables them to change quickly in the future. Organizations that delay the OC change, in the long run, would have to incur huge resources. A formal change is necessary for the growth and sustainability of firms. It makes firms more competitive and promotes a process-oriented culture. Thus the firms must change efficiency without delay. OC's efficient management improves employee morale and promotes a culture of teamwork and social interaction leading to production and excellence.

Further Considerations

Organizational CM is a process that requires detailed planning, clear goals, open communication, and continuous attention to employee feedback. OCs can scare and frustrate employees accustomed to specific routines, leading to resistance to change. To overcome this resistance, firms should promote communication because it bridges the gap between employees and managers. Managers should design a reward system for employees who accept the change happily in organizations. If employees view the ideal process rather than an interruption, the transition period may be smoother. This research has focused on re-examining the literature on OC Future research should expand the types of changes and change methods.

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