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## Mediating Effect of Internal Market Orientation on New Product Development in the Telecom Industry

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### ABSTRACT

The research indicated a gap in existing knowledge regarding the impact of teamwork quality on New Product Development (NPD) cycle time through the mediation of internal market orientation in the telecommunication industry in Saudi Arabia. The aim of this study was to obtain the mediating effect of market orientation on the relationships the independent variables of top management, inter-departmental dynamics, organizational system and the dependent variable of business performance. Random sampling was used to select respondents for a survey from among members of NPD teams in Saudi telecommunications firms with total respondents 149 teams and response rate of 88.67%. Findings indicated that internal market orientation was found to affect positively NPD cycle time. Internal market orientation fully mediated the relationship between balance of member contribution, mutual support and NPD cycle time. Internal market orientation partially mediated communication, coordination, efforts and cohesion and NPD cycle time.

**Key words:** Internal market, product, development, telecom industry

### INTRODUCTION

New product development includes a set of activities that moves a new product project from the point of idea generation to market launch and post implementation review. Many firms employ NPD as a means of pursuing future profitable growth. Variants of NPD include identifying a market opportunity and trying to match the needs of that market with the appropriate technology (i.e., market demand initiates the NPD process), seeking a market that might be interested in a newly developed technology (i.e., pushing the new technology on to a market), building a new product from pre-existing technology (e.g., platform product) or making slight variations to a product in order to customize it for individual market segments (Ulrich and Eppinger, 2000).

A new product development process is essentially a guideline on how to go about a new product project beginning from the idea phase to the market launch and over (Suss and

Thomson, 2010). One of the most common NPD process is the stage-gate system developed by Cooper (1990). Different from the cumbersome and time-consuming NASA-based on Phased Review Process of the 1960s, it focuses on business risks along with technical/engineering aspects of the product project (Saji and Mishra, 2012; Nepal *et al.*, 2011). It consists of five stages (workstation) that are opened by five gates (checkpoint), at which point a multidisciplinary team oversees inputs (clearly specified deliverables/a set of exit criteria (items upon which project is judged and potential hurdles) and the output in order for a decision to go, kill, hold or recycle to be made (Cooper, 1990).

Market orientation has been viewed from organizational behavior as it is referred to as an organizational culture that influences the behavior of the team members working in this organization (Abdul-Talib and Abd-Razak, 2012). When leaders adopt market orientation policies and set the goals to achieve market orientation objectives, such leaders tend to

promote and encourage a workplace culture in which employees work and cooperate to achieve the goals of the organization (Gummesson, 1987).

In addition, production may also deal directly with customers when they deal with complaints or inquiries concerning processed products or previously bought products. Accordingly, IMO entails the production and dissemination of intelligence concerning the employee's wants and needs and the design and employment of suitable responses to satisfy these wants and needs.

Market orientation has been defined from two perspectives: (1) Organizational culture (Homburg and Pflesser, 2000) and (2) Organizational behavior (Kohli and Jaworski, 1990). The cultural perspective refers to market orientation as the culture of the organization that produces the required behaviors effectively and efficiently for the development of superior value for buyers and therefore, ongoing optimum business performance (Homburg and Pflesser, 2000). Within this school of thought, researchers theorize market orientation based on three magnitudes: (1) Customer orientation, in which the firms' understanding that they must create superior value in order for their buyers to continue to return, (2) Competitor orientation, in which the firms' understanding of the strengths and weaknesses in the short term and the capabilities in the long-term, as well as both existing rivals and potential rivals and (3) Inter-functional coordination, in which inter-functional coordination is the synchronized use of company resources to create optimum customer value (Gresham *et al.*, 2006).

Literature has also stressed firms' requirement of enacting IMO for their successful implementation of market orientation (McGrath, 2009). The successful implementation of a market orientation needs all employees to produce information concerning external market, relay this information to the right people and react in a suitable manner. If an organization has already established an effective response to the internal market and improves values for employees, they are more inclined to enact their in-role behavior as well as employ market-oriented behaviors like obtaining customer feedback and relaying it to management. This employee's role is a significant source of market research information that is well-acknowledged (Gray, 2010). Moreover, IMO has the potential to involve employees who are well-enlightened of the firm's strategic objectives and who are equipped with accurate response to customer requests (Kaur *et al.*, 2009).

Although IMO's standard definition has not been agreed upon (Kaur *et al.*, 2009) maintained that internal marketing is a crucial part of the aggregate internal marketing orientation that involves the employment of marketing methods within the firm to create and carry out corporate values. The IMO measurement hence entails the assessment of the level to which this internal marketing function has been achieved successfully.

The aim of this study was to obtain the mediating effect of internal market orientation on new product development in the telecom industry.

## MATERIALS AND METHODS

**Mediating effect of internal market orientation:** In an attempt to examine the influence of a number of organizational factors that are related to teamwork on the performance of some of the large banks, Lancaster and van der Velden (2004) examined this impact through the mediating influence of internal market orientation. The findings of their study revealed that the market orientation policies mediated the relationship between teamwork characteristics and the performance of the banks.

Jaworski and Kohli (1993) conducted a study that attempted to examine the mediating impact of market orientation on the relationships the independent variables of top management, inter-departmental dynamics, organisational system and the dependent variable of business performance. The findings of their study revealed that the construct of market orientation did have a mediating influence on the relationships between the independent variables and the dependent variable. Thus based on these arguments, the following hypothesis is generated:

**H1:** Internal market orientation mediates the relationship between teamwork quality and NPD cycle time

And the following sub-hypotheses are generated:

**H1a:** Internal market orientation mediates the relationship between communication among the teamwork and NPD cycle time

**H1b:** Internal market orientation mediates the relationship between coordination among the teamwork members and NPD cycle time

**H1c:** Internal market orientation mediates the relationship between balance of member contribution among the teamwork and NPD cycle time

**H1d:** Internal market orientation mediates the relationship between mutual support within the teamwork and NPD cycle time

**H1e:** Internal market orientation mediates the relationship between efforts within the teamwork and NPD cycle time

**H1f:** Internal market orientation mediates the relationship between cohesion among the teamwork and NPD cycle time

**Mediating variable:** Internal Market Orientation (IMO) is the mediating variable and operationally refers to the multidimensional marketing concept that recognizes the need for an element of marketing focus on the internal environment of the firm. Internal market orientation was measured using the scale developed by Lings and Greenley (2005). The instrument used to measure internal market orientation was adopted from Lings and Greenley (2005) and it was reported to have a high validity score of internal reliability. Its contains

Table 1: Items to measure internal market orientation

No.	Items
<b>Informal information generation</b>	
1.	When at work I try to find out what employees want from the company
2.	When at work if I notice one of my employees is acting differently to normal I will try to find out if there is a problem which is causing a change in behavior
3.	When at work I try to find out my employee's real feelings about their jobs
4.	When at work I regularly talk to my staff to find out about their work
<b>Formal face-to-face information generation</b>	
1.	In our company we have regular staff appraisals in which we discuss what employees want
2.	In our company management meet with our employees at least once a year to find out what expectations they have of their jobs for the future
3.	In our company management interact directly with our employees to find out how to make them more satisfied
<b>Formal written information generation</b>	
1.	In our company we do a lot of internal market research
2.	In our company we survey our employees at least once a year to assess the quality of employment
3.	In our company we often talk with or survey people to identify influences on our employees' behavior (e.g., Unions, sales representatives, customers)
<b>Information dissemination</b>	
1.	In our company I regularly meet with all my staff to report about issues relating to the whole organization
2.	In our company I regularly report back to my staff about issues, that affect their working environment
3.	In our company we have regular staff meetings with employees at all levels attending
<b>Response</b>	
1.	In our company when we find out that employees are unhappy with our supervision or management, we take corrective action
2.	In our company when we find that employees would like us to modify their conditions of employment, the departments make concerted efforts to do so
3.	In our company we make changes to what we do when employee feedback indicates that they are dissatisfied with the status quo

five dimensions identified from exploratory factor analysis coincided those identified from the literature and explained 58.34% of the variance in the data. These are: Informal information generation (Cronbach's alpha = 0.81), Formal face-to-face information generation (Cronbach's alpha = 0.83), Formal written information generation (Cronbach's alpha = 0.77), information dissemination (Cronbach's alpha = 0.75) and responsiveness (Cronbach's alpha = 0.78). Moreover, analysis of the data provides strong evidence of discriminant validity, with the average variance of each IMO dimension being greater than its shared variance with any other dimension. It is therefore reasonable to assume all of the first order dimensions of the IMO scale to be unidimensional. This instrument was widely used in many types of industry and it is felt that it has no problem to be used in the context of Saudi telecommunication study.

The scale consists of 16 items covering the five dimensions of the construct. Four items represent informal information generation, three items represent formal face-to-face information generation, three items formal written information generation, three items information dissemination and three items capture responsiveness. Each item was scored on a seven-point Likert scale, ranging from '1' "Strongly disagree" to '7' "Strongly agree". A complete scale of items used to assess internal market orientation is presented in Table 1.

## RESULTS

**Normality:** Normality is the most fundamental assumption in multivariate analysis (Hair *et al.*, 2010). It measures the

differences revealed between the obtained and predicted scores of dependent variables (Stewart, 1981). Because the study sample was taken from the population, it is crucial to compare the sample normal distribution to one of the basic social science measurements, namely, the normal distribution of the population. According to Gupta and Walker (2005), normal distribution is the most commonly utilized probability in social science. The normal density function is described as a bell-shaped distribution that is symmetric to the values surrounding the mean. Although PLS-SEM does not require that data has to be normally distributed. Normality test was still conducted for good science.

To check for normality, four measures were used in this study to measure and assess the spread of data distribution: Standard deviation, mean, skewness and kurtosis. Standard deviation is described as a measure of the way the data is spread; it is the average distance of the data distribution from the mean. It presents the degree of variation from the mean, with a low standard deviation indicating data that is close to the mean and high standard deviation indicating the data distribution over a range of values. It is a common measure used to test and appraise the data dispersion by calculating the square root of the variance (Bryman and Bell, 2003).

Skewness and kurtosis are two statistical measures that can be used to describe the shape and symmetry of the sample distribution. Skewness, according to Tabachnick and Fidell (2007), can be described as the distribution symmetry and a variable whose mean is not in the middle of the distribution is considered as a skewed variable. A distribution is considered normal when the skewness value is zero (Tabachnick and Fidell, 2007). A positive skewness sample distribution should have a right tail (scores leaning to the left at low values) while

a distribution characterized by a negative skewness value should have a left tail (to the right of the graph) (Well and Myers, 2003).

Kurtosis, on the other hand, relates to the distribution peakedness (Johansson, 2000). It is defined as the measure that shows the extent to which the study observations are clustered around the mean. A normal distribution is said to exist when the kurtosis value is zero (Tabachnick and Fidell, 2007). In addition, kurtosis is said to be positive if the distribution is peaked in the center with long thin tails and it is a negative when the observations cluster less and have shorter tail (too many cases in the extremes). Kurtosis may lead to the underestimation of variance but the risk is reduced when the samples are large 200+ cases (Tabachnick and Fidell, 2007).

Several authors stated that absolute values of univariate skewness higher than 3.0 indicate extremely skewed data sets (West *et al.*, 1995). As for kurtosis, absolute values of index higher than 10.0 are deemed to be problematic and those higher than 20.0 serious (Kassim, 2001). Hair *et al.* (1998) contended that a critical value of less than -2.58 or greater than +2.58 indicates the rejection on assumption of normality at the 0.01 level of probability. In contrast, a value less than -1.96 or greater than +1.96 indicates the rejection on assumption of normality at the probability level of 0.05.

In this study, the researcher set the maximum acceptable limit of observation values up to  $\pm 3$  for the skewness and up to  $\pm 7$  for the kurtosis. As shown in Table 2, skewness and kurtosis were checked and results, were within the acceptable range.

**Study variable descriptive:** In the following section a detailed description, of means and Standard Deviation (STD) was calculated for each construct and overall factors for the study variable (teamwork quality, internal market orientation environmental turbulence and new product development cycle time).

Descriptive analysis of the means and standard deviations of constructs are shown in Table 3. Among the constructs, followed by informal information generation ( $M = 5.51$ ,  $SD = 0.84$ ), cohesion ( $M = 5.04$ ,  $SD = 0.71$ ) and communication ( $M = 4.94$ ,  $SD = 0.75$ ). Likewise, mutual

support had the lowest mean ( $M = 2.73$ ,  $SD = 1.09$ ) among the constructs. However, formal face-to-face information generation has the highest standard deviation ( $SD = 1.64$ ) among the constructs. All items were measured on a seven-point scale.

**Measurement model:** The major aspect of construct validity that needs to be established is the assessment of whether the measured variables behave in a way that is consistent with the way they were theoretically expected to behave. This aspect of construct validity is usually established by testing for convergent and discriminant validities by ensuring that, once cross-loading items are dropped, items load cleanly and exclusively on the constructs (factors) upon which they are posited to load.

**Convergent validity:** Convergent validity is exhibited when all the measures of a certain construct correlate and 'stick' together in terms of the concept they reflect (Hair *et al.*, 2006). Establishing convergent validity assures the researcher that all the measures of the construct are actually measuring the same construct or concept and move in the same conceptual direction. The previous study conducted evaluations on the basis of convergent validity analysis conditions proposed by Anderson and Gerbing (1988), the CFA proposed by Bagozzi and Yi (1988) and the GoF. There are many ways to establish convergent validity. In this study, three evaluation criteria used to assess convergent validity by examining:

- Reliabilities of items scale
- Composite Reliability (CR) of each construct
- Average Variance Extracted (AVE)

As shown in Table 4, the composite reliability of every construct in this study was well above the suggested 0.70 threshold.

**Mediating effect:** In this section, the impact of internal market orientation as mediators of relationship between dimensions of teamwork quality and new product development cycle time was separately assessed. Figure 1 shows the estimated path

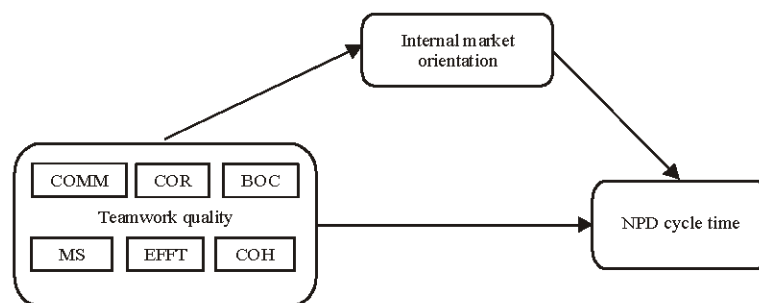


Fig. 1: Mediator model

Table 2: Descriptive statistics (means, std. deviation, skewness and kurtosis) for study variables (n = 149)

Item	Mean Statistic	Std. deviation statistic	Skewness		Kurtosis	
			Statistic	Std. error	Statistic	Std. error
TWQ_Coord1	5.01	1.200	-0.775	0.199	0.533	0.395
TWQ_Coord2	5.22	1.213	-1.126	0.199	1.506	0.395
TWQ_Coord3	5.03	1.317	-1.087	0.199	1.041	0.395
TWQ_Coord4	4.28	1.465	-0.266	0.199	-0.981	0.395
TWQ_BOC1	2.70	0.934	0.674	0.199	0.606	0.395
TWQ_BOC2	2.38	0.990	1.790	0.199	4.890	0.395
TWQ_BOC3	3.52	1.659	0.722	0.199	-0.640	0.395
TWQ_EF1	5.31	1.114	-0.993	0.199	1.442	0.395
TWQ_EF2	5.14	1.263	-0.637	0.199	0.203	0.395
TWQ_EF3	5.40	1.114	-0.983	0.199	1.092	0.395
TWQ_EF4	4.47	1.540	-0.533	0.199	-0.494	0.395
TWQ_Comm1	5.79	1.094	-1.195	0.199	1.706	0.395
TWQ_Comm2	5.26	1.291	-1.245	0.199	1.373	0.395
TWQ_Comm3	5.40	1.132	-0.942	0.199	0.997	0.395
TWQ_Comm4	4.36	1.616	-0.616	0.199	-0.596	0.395
TWQ_Comm5	5.22	1.294	-1.010	0.199	0.848	0.395
TWQ_Comm6	4.83	1.517	-0.970	0.199	0.207	0.395
TWQ_Comm7	4.23	1.583	-0.601	0.199	-0.632	0.395
TWQ_Comm8	4.82	1.310	-0.682	0.199	-0.316	0.395
TWQ_Comm9	4.58	1.264	-0.604	0.199	-0.072	0.395
TWQ_Comm10	4.93	1.217	-0.941	0.199	0.910	0.395
TWQ_MS1	2.54	1.118	1.007	0.199	0.746	0.395
TWQ_MS2	2.79	1.200	1.517	0.199	2.834	0.395
TWQ_MS3	2.93	1.298	1.028	0.199	0.675	0.395
TWQ_MS4	2.66	1.329	1.287	0.199	1.779	0.395
TWQ_MS5	2.71	1.181	1.351	0.199	1.873	0.395
TWQ_MS6	2.76	1.261	1.143	0.199	1.460	0.395
TWQ_COH1	5.87	0.998	-1.547	0.199	5.046	0.395
TWQ_COH2	4.15	1.667	-0.151	0.199	-1.052	0.395
TWQ_COH3	5.24	1.256	-1.070	0.199	1.329	0.395
TWQ_COH4	5.43	1.141	-1.126	0.199	2.581	0.395
TWQ_COH5	5.08	1.271	-1.134	0.199	1.319	0.395
TWQ_COH6	3.99	1.726	-0.101	0.199	-1.192	0.395
TWQ_COH7	4.86	1.072	-0.282	0.199	-0.034	0.395
TWQ_COH8	5.30	1.130	-1.259	0.199	2.302	0.395
TWQ_COH9	5.20	1.168	-0.916	0.199	0.907	0.395
TWQ_COH10	5.32	1.274	-1.229	0.199	1.850	0.395
IMO_IIG1	5.52	1.031	-1.040	0.199	1.508	0.395
IMO_IIG2	5.51	1.063	-1.002	0.199	1.332	0.395
IMO_IIG3	5.45	1.036	-0.880	0.199	1.012	0.395
IMO_IIG4	5.57	0.887	-0.922	0.199	1.484	0.395
IMO_FFIG1	4.44	1.621	-0.611	0.199	-0.709	0.395
IMO_FFIG2	4.12	1.856	-0.352	0.199	-1.146	0.395
IMO_FFIG3	4.02	1.784	-0.299	0.199	-0.979	0.395
IMO_FWIG1	4.52	1.398	-0.787	0.199	0.233	0.395
IMO_FWIG2	4.64	1.538	-0.841	0.199	0.173	0.395
IMO_FWIG3	4.36	1.516	-0.434	0.199	-0.275	0.395
IMO_ID1	4.82	1.336	-0.697	0.199	0.476	0.395
IMO_ID2	4.89	1.343	-0.908	0.199	0.892	0.395
IMO_ID3	4.65	1.433	-0.860	0.199	0.387	0.395
IMO_RESP1	4.72	1.543	-0.748	0.199	0.019	0.395
IMO_RESP2	4.67	1.686	-0.600	0.199	-0.499	0.395
IMO_RESP3	4.45	1.500	-0.474	0.199	-0.423	0.395
NPDCT_ELB1	4.77	1.216	-0.796	0.199	0.860	0.395
NPDCT_ELB2	4.76	1.212	-0.795	0.199	0.261	0.395
NPDCT_ELB3	4.77	1.269	-0.487	0.199	0.106	0.395
NPDCT_ELB4	4.68	1.452	-0.279	0.199	-0.757	0.395

models, every one of which covers one of the mediator constructs (for instance, balance of member contribution, cohesion, communication, coordination, efforts and mutual support).

Following Shrout and Bolger (2002) recommendation on variance accounted for (VAF), VAF >80% can be considered as full mediation, VAF greater than 20% but less than 80% can be considered as partial mediation while VAF less than 20%

Table 3: Descriptive statistics of latent construct

Construct	Mean	Std. deviation
NPD cycle time	4.74	1.10
Coordination	4.88	0.92
Balance of member contribution	2.87	0.72
Efforts	5.08	0.87
Communication	4.94	0.75
Mutual support	2.73	1.09
Cohesion	5.04	0.71
Informal information generation	5.51	0.84
Formal face-to-face information generation	4.19	1.64
Formal written information generation	4.51	1.34
Information dissemination	4.79	1.19
Response	4.61	1.46

indicates no mediation. As shown in Table 5, internal market orientation worked as a full mediator to the relationship between balance of member contribution and mutual support with new product development since VAF had values of 101 and 105%, respectively. Furthermore, internal market orientation worked as a partial mediator in the relationship between four dimensions of teamwork quality and new product development cycle time. These four dimensions were communication, coordination, effort and cohesion and coordination. They showed VAF values of 70, 64, 52 and 54%, respectively.

## DISCUSSION

**Teamwork quality and NPD cycle time:** This result is consistent with that of Kahn (1998), who argued that formal and structured communication does not facilitate procedures between functions. While information is important, forcing communication does not appear to be a solution. It may be that interaction is a necessary but not a sufficient factor for implementing process. However, this result is not consistent with that reported by Hoegl and Gemuenden (2001) who found that teamwork quality correlated significantly with team performance evaluated by team members, team leaders and project managers. Also, this result disagrees who found that a lack of communication and the existence of misunderstanding between team members and stakeholders of a project were the two main causes of project failure. Also, this result disagrees with Gatignon and Xuereb (1997), who observed that communication between different functional areas could promote the extent of improvement in a new product process.

The non-significant result may be attributed to the fact that in Saudi telecommunication companies, communication between all stages in the production cycles depends on automated systems which allow transformation to go from one stage to the next stage through the systems. One of the main reasons why communication is done through automated systems rather than personal face-to-face communication is because many employees in Saudi Arabia are foreigners particularly from Asian countries such as India and Pakistan. Due to language barrier, automated and systematic communication channels replace personal communication.

In this context, the result is different from Hoegl and Gemuenden (2001), who found a discrepancy between the

Table 4: Psychometric properties for first order constructs

Constructs and items	Loadings	Alpha	CR	AVE
<b>BOC</b>				
TWQ_BOC1	0.86	0.74	0.86	0.76
TWQ_BOC2	0.91			
<b>COH</b>				
TWQ_COH10	0.88	0.93	0.95	0.77
TWQ_COH3	0.91			
TWQ_COH4	0.81			
TWQ_COH5	0.88			
TWQ_COH8	0.90			
TWQ_COH9	0.87			
<b>COMM</b>				
TWQ_Comm1	0.74	0.88	0.91	0.67
TWQ_Comm10	0.90			
TWQ_Comm5	0.76			
TWQ_Comm8	0.88			
TWQ_Comm9	0.87			
<b>CORD</b>				
TWQ_Coord1	0.88	0.86	0.92	0.80
TWQ_Coord2	0.90			
TWQ_Coord3	0.89			
<b>EFFT</b>				
TWQ_EF1	0.92	0.90	0.95	0.85
TWQ_EF2	0.93			
TWQ_EF3	0.92			
<b>MS</b>				
TWQ_MS1	0.88	0.94	0.96	0.79
TWQ_MS2	0.85			
TWQ_MS3	0.87			
TWQ_MS4	0.92			
TWQ_MS5	0.91			
TWQ_MS6	0.88			
<b>FFIG</b>				
IMO_FFIG1	0.90	0.91	0.95	0.87
IMO_FFIG2	0.94			
IMO_FFIG3	0.95			
<b>FWIG</b>				
IMO_FWIG1	0.88	0.88	0.93	0.81
IMO_FWIG2	0.90			
IMO_FWIG3	0.92			
<b>ID</b>				
IMO_ID1	0.90	0.84	0.90	0.75
IMO_ID2	0.85			
IMO_ID3	0.85			
<b>IIG</b>				
IMO_IIG1	0.85	0.84	0.90	0.70
IMO_IIG2	0.85			
IMO_IIG3	0.88			
IMO_IIG4	0.76			
<b>RESP</b>				
IMO_RESP1	0.91	0.92	0.95	0.86
IMO_RESP2	0.94			
IMO_RESP3	0.93			
<b>NPD</b>				
NPDCT_ELB1	0.86	0.87	0.92	0.73
NPDCT_ELB2	0.85			
NPDCT_ELB3	0.87			
NPDCT_ELB4	0.85			

BOC: Balance of member contribution, COH: Cohesion, COMM: Communication, CORD: Coordination, EFFT: Effort, MS: Mutual support, FFIG: Formal face-to-face information generation, FWIG: Formal written information generation, ID: Information dissemination, IIG: Informal information generation, RESP: Response, NPD: New product development cycle time

explanatory power of teamwork quality on team performance between different types of raters (team members and

Table 5: Indirect effects of teamwork quality dimensions on NPD cycle time through internal market orientation (5,000 Bootstrap samples)

Hypotheses	Exogenous	Mediated	Endogenous	Direct effects	Indirect effect	Total effects	VAF (%)	Mediating hypothesis
H1a	COMM	IMO	NPD cycle time	0.12	0.28	0.40	70	Partial mediation
H1b	CORD	IMO	NPD cycle time	0.14	0.26	0.40	64	Partial mediation
H1c	BOC	IMO	NPD cycle time	0.00	-0.38	-0.38	101	Full mediation
H1d	MS	IMO	NPD cycle time	0.02	-0.37	-0.35	105	Full mediation
H1e	EFFT	IMO	NPD cycle time	0.24	0.26	0.50	52	Partial mediation
H1f	COH	IMO	NPD cycle time	0.24	0.28	0.52	54	Partial mediation

Variance Accounted For (VAF): Indirect effect/total effect (Shrout and Bolger, 2002)

stakeholders). Several possible reasons can be given for these differences. One of the reasons could be that the raters had different properties or a different reference framework (Hauschildt *et al.*, 1996). Team members have more knowledge about the details of the new product processes and the progress of the project while stakeholders rely more on information given in controlling reports and information given in (progress) meetings. So team members have more 'microknowledge' while stakeholder's base their judgments on more 'macro knowledge' of the project. Hoegl and Gemuenden (2001) called this macro vision a "bird's-eye view". They suggested that team members may have been missing relevant details about some of processes details of the team in terms of quality, schedule or budget. Furthermore, stakeholders' ratings might be influenced by their perception of the overall performance of the larger development project or customer relationship to which a project team was contributing. Also, it is possible that team members assessed the performance of the team based on their overall impression of the expertise of the team leader or team members, instead of basing it merely on the actual performance of the team since they did not have better knowledge of the actual activities and communication within team members.

**Mediating effect of internal market orientation on the relationship between teamwork quality and NPD cycle time:** Internal market orientation was examined as a mediator between all dimensions of teamwork quality and new product development cycle. Result suggested that IMO worked to mediate between all dimensions and NPD cycle time. In particular, internal market orientation fully mediated between balance of contribution and mutual support and NPD cycle time and partially mediated between communication, coordination, effort and cohesion and NPD cycle time.

The partial mediation between communication and new product development cycle time supports the argument of Smidts *et al.* (2001), who emphasized that a communication process is crucial in encouraging organizational identification which in turn lead to better organisational performance. Also, the result supports Johlke and Duhan (2001) finding that bi-directional informal communication between management and staff positively impacted front-line staff and improve production process. This result indicates the importance of internal market orientation by improving communication among teamwork members which has a positive impact on new product development cycle time. In the telecommunication firms, communication among all departments is done via instant messaging such as electronic

emails, automated systems and electronic tools to transfer tasks between all production stages. Hence, transferring activities between all departments become almost negligible. Information flow through an organization is imperative as it not only helps steer clear of mistakes but also develops processes and procedures among the many organizational members. On the other hand, ineffective communication prevents market-oriented activities and it results in conflict due to misunderstandings, erroneous strategies and feelings of frustration. Such conflicts and misunderstanding between members could have a negative impact on organizational performance.

The partial mediating effect of internal market orientation on the relationship between coordination among teamwork members and new product development cycle time in the telecommunication industry in Saudi Arabia confirms the argument of Etgar (1979). Coordination in the telecommunication firms is highly important between team members to minimize the process and transferring task through different production stage. It is also to avoid wrong submission of tasks to non-related teams that may leads to conflict in sequences of production stages. Moreover, it also used to specify the stages and the tasks to be implemented in parallel with different departments. As such, coordination has a high impact on reducing new product development cycle time.

Internal market orientation was also found to fully mediate the relationship between balance of members' contribution and new product development cycle time in the telecommunications firm in Saudi Arabia. This result is consistent with that of Lancaster and van der Velden (2004), who observed that internal market orientation policies affected the relationship between employees' characteristics and performance. In the telecommunication teams, the internal market orientation was shown to have a medium impact on the relationship between balance of members' contribution and NPD cycle time. This is because all tasks in most production stages are globalized and specified early and team members in general are to follow specific procedures.

Full mediation of internal market orientation on the relationship between mutual support among teamwork members and new product development cycle time was observed. This result supports previous studies (Berry and Parasuraman, 1991; Sasser and Arbeit, 1976; Stauss and Schultze, 1990). According to Sasser and Arbeit (1976), employees generally exchange time, energy and values for the firm's money and this is analogous to an external market exchange wherein customers primarily provide cash to obtain goods or services. In the telecommunication industry, mutual



support among the team members positively improve of NPD cycle because it is related to the extent to which team members handle conflict cooperatively, assist each other when help is needed and develop and respect others' ideas (Tjosvold, 1998).

Internal market orientation was also found to partially mediate the relationship between efforts and new product development cycle time. This result partially supports the findings of Deshpande and Farley (2000), Grinstein (2008), Kirca *et al.* (2005), Pattikawa *et al.* (2002) and Zhang and Duan (2010), found that effort had a positive impact on new product performance. In telecommunication firms, internal market orientation is highly related to efforts among teamwork members. The team's success hinges upon team members' willingness to exert effort on behalf of the team (Kidwell and Bennett, 1993). In teams whose success depends on the effort of all members, performance deficit may occur when one or more members make little effort towards goal attainment (Kidwell and Bennett, 1993).

Finally, internal market orientation was found to partially mediate relationship between cohesion and new product development cycle time. This result is partially consistent with that of previous studies (Deshpande and Farley, 2000; Kirca *et al.*, 2005; Pattikawa *et al.*, 2002; Zhang and Duan, 2010). In telecommunication firms cohesion refers to the extent to which members feel a strong attachment to each other and a desire to remain as part of the team (Beal *et al.*, 2003).

## CONCLUSION

The primary aim of the study was to examine the factors of teamwork quality that affect the new product cycle time in telecommunication industry in Saudi Arabia. The findings revealed that factors of teamwork quality (except communication) were significant in impacting new product development cycle time in the telecommunication industry in Saudi Arabia. According to the results, coordination, balance of member contribution, mutual support, effort and cohesion were positively associated with the new product development cycle time.

This study also contributed to the internal market orientation in mediating the relationship between teamwork quality and new product development cycle time. Result suggested that IMO worked to mediate between all dimensions and NPD cycle time. In particular, internal market orientation fully mediated between balance of member contribution and mutual support and NPD cycle time and partially mediated between communication, coordination, effort and cohesion and NPD cycle time. In addition, this study indicated that environmental turbulence moderated the relationship between the two dimensions of teamwork quality (communication and coordination) and new product development cycle time. The results of the findings pave the way for future studies to be done in this area.

This study is rife with several limitations that must be kept into consideration and tackled in future studies. First and foremost, the current research dwelt on specific teams on

specific industry and the results obtained are for telecom industry in Saudi Arabia only. There is a need to replicate this study in other countries in different industries to validate the findings reported here.

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