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EXPLORATORY FACTOR ANALYSIS OF INTERNAL RESOURCE BASED VIEW FOR NEW PRODUCT DEVELOPMENT PROCESS IN PAKISTAN'S MANUFACTURING SECTOR

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ABSTRACT
This study examines the elements that influence the internal resource based view of manufacturing enterprises in Pakistan, which is in line with the United Nations 2030 Sustainable Development Goals 9 and 12. The resources revealed in this study can be used as success factors in the development of new goods. Purposive sampling was used to collect data from a sample of 318 male and female employees working in the new product development process (NPDP) in various manufacturing organizations in Pakistan in order to meet the research objectives. A reliability test and an exploratory factor analysis were also used. Exploratory factor analysis yielded the identification of seven internal resources. Seven internal resources are subjected to a reliability test using Cronbach's Alpha, which meets the good reliability analysis criteria. RBV has rarely addressed the subject of resource identification in poor nations like Pakistan in prior studies, therefore this study will be useful for both industrialists and researchers in determining which resources are required for NPDP. In the future, the extracted dimensions of IRBV in this study can be used as independent variables in a theoretical framework, and their influence on the new product development process could be examined.
Key Words: Internal Resource Based View, Exploratory Factor Analysis,
Reliability Analysis, Manufacturing Sector

BACKGROUND OF RESEARCH
According to the United Nations Sustainable Development Goals 2030, especially goals 9 and 12, the most important aspects for any organization are new development and stable resources for industry, innovation, and infrastructure, as well as achieving responsible consumption and production standards. Internal and innovative resources must be identified to get a competitive advantage. Many studies have claimed that a firm's competitive advantage is dependent not only on its new products but also on the contributions of its internal resources during the NPDP (for example, Parahald & Hamel, 1990; Newbert, 2007).

As a result, the firm's internal resources and new development are directly linked, contributing to the company's total performance. As a result, managers' most challenging work is to discover valuable resources that may significantly contribute to the new product development processes (NPDP). For future success, NPD companies must define their long-term resource base. Researchers have previously discovered that tangible and intangible resources are complementary for NPDP (e.g., Heirman & Clarysse, 2007; Smith, 2008; Surroca, Tribo, & Waddock, 2010). It's easy to find and use resources like automation, machine building, and currency, but it's more

difficult to find and use hidden resources. As a result, it's become critical for every business to figure out how to detect and use intangible assets in order to compete in today's market.

The manufacturing industry is the backbone of Pakistan's economy, contributing the third biggest share of all sectors to the country's GDP. In this industry, there are thousands of manufacturing companies, but the large scale manufacturing (LSM) sector is the most important. The manufacturing industry is currently experiencing a significant downturn as a result of the global recession, high financing costs, fierce competitiveness, business rivalry, and a scarcity of resources. Businesses are experiencing negative growth as a result of these formidable hurdles. Due to the above mentioned obstacles, enterprises in developing nations such as Pakistan confront difficult conditions. As a result, manufacturing enterprises find it challenging to compete in a market. As a result, planners must devise strategies for their businesses that can be reorganized on a regular basis to meet the changing needs of the environment. Challenges can also be found in the execution of new methods, such as the quality of a substitute product, time management, active teamwork, and overcoming answer hurdles with limited resources, among other things. The majority of Pakistani manufacturing businesses do not centralize RBV; as a result, the key aim of current inquiry is to highlight the hidden area of RBV and to examine the critical role of RBV in the success of NPDP in Pakistani manufacturing companies. The use of hidden resources could help to reduce the manufacturing sector's negative and slower growth rate. The use of hidden resources may prove beneficial in diminishing the negative and fewer rate of growth in the manufacturing sector. Consequently, the current study has two goals: first, to investigate unidentified internal resources within the framework of RBV that could collectively contribute to NPDP, and second, to evaluate the validity and reliability of these resources.

REVIEW OF LITERATURE

The term "valuable, rare, inimitable, and non-substitutable" (VRIN) was coined for the first time by Barney (1991) to describe a company's resources. The identification of VRIN resources is seen to be important for the company's competitive advantage (Teece et al., 1992: Barney, 1991; Schoemaker, 1990; Wernerfelt, 1984; Penrose, 1959). When it comes to identifying the firm's internal and external resources, the resource-based view (RBV) is the most influential perspective (Smith, 2008; Zahra et al., 2006). "The process by which particular resources offer competitive advantage stays during a black box," according to Barney's understanding of RBV theory (Barney, 2002: 33). In this description, a black box is a hidden box that can be opened to reveal hidden information, such as the firm's hidden internal resources that can be used to produce value.

A wide spectrum of strategic management research, including theoretical and empirical studies, has identified the importance of tangible and intangible resources for a corporation to achieve a specific, strong position in their sector over a twenty-five-year timeframe (e.g., Wagner et al., 2011; Gumusluoglu & Ilsev, 2009; Wang et al., 2009; Smith, 2008; Paladino, 2008; Koufteros et al., 2005; Galbreath, 2005; Barney et al., 2001; Eisenhardt & Martin, 2000; Barney, 1991; Wernerfelt, 1984 etc). According to Barney's interpretation of RBV theory, the most significant ape-man is the correlation process of a firm's unique skills and internal and external assets, which should not be left in the dark, particularly when it comes to NPD research. As explained above, this study is unpacking a black box i.e. NPD processes for accomplishing new products success. When internal resources (IR) are carefully incorporated into the NPD process, it can be quite effective (see, Song et al, 2011; Parry et al., 2010; Schmidt et al., 2009; García et al., 2008; Chen et al., 2006; Barney, 2001a; Calantone, et al., 2004). The study also focuses on adding a dimension to RBV by identifying and utilising the firm's valuable and unique resources in a culturally appropriate manner. These resources are always controlled by the companies, but they rarely pay attention to the current significant aspect. Internal resources are also a major factor in new product success.

Previous research have shown that a company's own resources comprise of technical, innovation, learning and expertise, market alignment, cross functional involvement, and the management team (Wu, 2010; Surroca et al., 2010; Hull & Covin, 2010; Debruyne et al., 2010; Hsueh et al., 2010; Harmancioglu et al., 2009; Liu et al., 2009; Gudergan et al., 2008; Paladino, 2006, 2007, 2008; Frederick, 2005; Sahay & Rilay, 2003; Zahra & Neilsen, 2002; Schroeder et al., 2002; Danneels, 2002; Lee et al., 2001; Moenaert et al., 2000; Kusunoki et al., 1999; Hoopes, & Postrel, 1999; Verona, 1999; Gatignon & Xuereb, 1997; Flood et al., 1997). As a result, NPD

process knowledge is frequently obtained by merging a company's own resources, which can lead to success. Internal resources such as top management facilitation (TMF), cross-functional teams (CFT), NPD team business intelligence (TBI) are frequently identified in terms of NPD process in line with cultural context, which are discussed below;

Top Management Facilitation

The team in charge of putting the new strategy plan into action is generally the first and most important internal resource. NPD scholars are of the view that support of the active team members (Lin, 2010; Swink, 2000), their engagement within the process (Cooper & Kleinschmidt, 1995, 2007; De Brentain & Kleinschmidt, 2004; Gomes et al., 2001), positive attitude while dealing difficult situations (Calantone et al., 2003), and commitment (Cooper & Edget, 2010; Rodrignez et al., 2008; Cooper & Kleinschmidt, 2007) play pivotal part in accomplishing the new producs success (NPS). The key takeaway from prior studies was that an effective management propels a company's new products effectively into the market (Huang & Tsai, 2013).

The technical parts of top management teams are risk-taking behavior, involvement, support, and commitment but the social aspect, which refers to the "human" side, is overlooked (Felekoglu & Moultrie, 2014). Although a variety of research on top management is currently being conducted, one gap in the literature is that the direct effect of top management on NPS has been thoroughly explored, but the process component has been mostly disregarded. This demonstrates the importance of top management in the NPD process. Another flaw is that the research was primarily technical in nature, with only small attention paid to the human side. This human aspect frequently includes top management facilitation, which allows top management to spend more time with NPD team members and stay in touch with them at all times. The NPD process can be made easier if top management helps. As a result, one of the most essential factors is top management facilitation, which should be included in top management team structures for making NPDP successful.

Cross-Functional Teams

Cross-functional teams are another key internal resource. The performance of a company is largely determined by its cross-functional teams (CFT), which are considered an intangible resource of the company. The function of CFT in the success of a brand new product was thoroughly examined in NPD's vast study work. CFT is made up of professionals from the marketing, finance, research & development, manufacturing, and engineering fields (Feng et al., 2010; Fitzpatrick & Askin, 2005; Keller, 2001).

The researchers have emphasized the importance of involving CFT in the creation of brand new manufacturing processes (Song et al., 2010). It's been interpreted as CFT integration by previous researchers (e.g., Brockman et al., 2010; Chien & Chen, 2010; Wong et al., 2009; Atauhene- Gima & Li, 2004; Song & Montoya-Weiss, 2001; Griffen & Hauser, 1996 etc.). And in some previous studies it's interpreted as CFT collaboration (Feng et al., 2010; Chien & Chen, 2010; Fan et al., 2009; Hacklin et al., 2006; Emden et al., 2006). The impact of CFT on each level of the NPD process has yet to be investigated. A comprehensive research project is needed that not only considers the functional and descriptive clarity of CFT, but also includes deeply into the implications of CFT involvement, integration, and collaboration at all phases of the NPD process.

Business Intelligence of NPD Teams

Business intelligence (BI), as an informed, knowledgeable, and learning source, is also critical in the NDP process. Designing, regulating, assembling, surveying, and publicizing information are some of the stages of business intelligence. When a company is engaged in the development of new products, these phases provide expertise to the working body of the company (Calof & Wright, 2008; Bose, 2007; Blenkhorn & Fleisher, 2005). Economic enterprises are currently competing on the basis of the quality of their goods and services. As a result of the new hurdles, businesses are unable to sustain any economic losses, causing a stumbling block in the NPD process. As a result, businesses must come up with fresh techniques and methods for producing new items. Organizations are expected to come up with new ways to alter things, which can only be accomplished through the use of information and knowledge management skills.

Required knowledge and abilities in the development process of new goods are essential for team members and administrators to acquire (Søndergaard & Harmsen, 2007). The collection of core business skills is a critical feature for those successful businesses that are constantly

engaged in attaining the best possible results after selling their items to increase market demand, members of a company must have a good awareness of the distribution network, procedures, competitiveness, dealing, and strategic monitoring skills (Shankar et al., 2013; Gilad, 2011; Müller et al., 2010; Calof & Wright, 2008; Akgün et al., 2008; Tanev & Bailetti, 2008; Trim & Lee, 2007, 2008; Trim, 2004). This study used this unique business intelligence driver as a cognitive measure to assess the mental capacities of NPD team members, which includes all actions related to practical understanding such as planning, problem solving, deciding , calculating, evaluating etc. The study also attempted to overcome discrepancies within the body of data by building a link between the NPD process and business intelligence, with business intelligence being defined as a firm's internal resource, which has never been researched before in the literature on new development. As a result, it is determined that combining intangible assets can boost a firm's member's efficiency while also being beneficial in achieving new product success.

RESEARCH METHODOLOGY

To assess the impact of the most recent strategy, a field research was conducted to collect data using two techniques that were (i) questionnaire; and (ii) interviews. As a result, the questionnaire was the most important technique for data collection in this study. The information was gathered from manufacturing companies operating in major cities of Pakistan's, where head offices of manufacturing firms are situated. The research items were taken from following sources e.g., TMF items are adapted from previous researchers (such as, Menon et al., 1997; Song & Parry 1997; Cooper & Kleinschmidt, 1995; Swink, 2000; Song et al., 2000; Fernández et al., 2000; Kleinschmidt et al., 2007; Rodríguez et al., 2008). CFT items were adapted from Aram et al. (1971); Pinto et al. (1993); Song and Parry (1997); Parry et al., (2010). Items of BI are adapted from Beal, (2000) and Dröge et al. (2008).

The managers who had knowledge of the NPD process and were constantly involved in its choices were the participants of the study, who were chosen through a purposive sampling technique. Some managers spent 10 to 15 minutes to complete the questionnaires, while others needed one to two weeks to complete them. The questionnaires were not returned by a number of respondents. As a result, 450 questionnaires were distributed to 50 manufacturing enterprises in total, 380 questionnaires were returned, and 62 questionnaires were deemed unusable, resulting in a total of 318 properly filled questionnaires. As a result, the current study's response rate was 70%.

RESULTS AND DISCUSSION

The basic method for determining the validity of a scale is factor analysis. For example, the correlation between items is administered (Floyd & Widaman, 1995). The Cronbach's Alpha reliability test could be a good way to determine internal consistency (Cronbach, 1971). This reliability test is used to obtain correlational analysis because it provides a good opening point for further mining factors from factor analysis (Field, 2013).

Factor Extraction

Before factor extraction, first of all Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity are used to administer the sample technique. It is endorsed by Tabachnick and Fidell (2007) that a sample size of 300 is sufficient for correlational analysis. The sample size in this study is 318, which meets the necessary criteria. Internal resource scale, which is divided into three subscales, (i) top management facilitation (TMF); (ii) cross-functional team (CFT) and (iii) business intelligence (BI), KMO measure sample adequacy reported is 0.871 and Bartlett test has significance level of $p = 0.000$. Because the KMO value is above 0.50 (Field, 2013; Pallant, 2010; Tabachnick & Fidell, 2007; Kaiser, 1974) and the Bartlett's test significance level is below 0.05 (Pallant, 2010; Bartlett, 1954), correlational analysis of the data is acceptable. Internal resource scale (TMF, CFT, and BI). Eigen values and percentages of variance are also examined. The Eigen value must be greater than one, and seven factors must be retrieved. Eigen values of 9.27, 2.92, 2.38, 1.51, 1.45, 1.15, and 1.07 were found within the EFA factor solution, accounting for variances of 11.87%, 9.79%, 9.76%, 9.20%, 7.67%, 7.42%, and 6.45%, with an aggregate variance of 62.16%. This suggests that the seven retrieved factors have modelled 62.16% of the data's variability. To verify the goodness of measure, the size is further quantified using principal

component analysis (PCA) and the Varimax rotation method for extracting factors from a group of knowledge. PCA is the most suited tool for conducting correlational analysis in science study (Stevens, 1996). The PCA and Varimax rotation matrix findings (see Table 1) reveal the extraction of seven factors. As a result, the factor loading results match Hair, Anderson, Tatham, and Black's requirements for correlational analysis (1998).

Table No. 1 Factor Loadings for IRBV Scale

	Extracted Components						
Item	1	2	3	4	5	6	7
TMF.1				.809			
TMF.2				.811			
TMF.3				.692			
TMF-4				.662			
TMF.5		.654					
TMF.6		.759					
TMF.7		.763					
TMF.8		.707					
TMF.9		.762					
TMF.10		.808					
CFT.1	.819						
CFT.2	.709						
CFT.3	.769						
CFT.4	.761						
CFT.5	.683						
CFT.6	.687						
CFT.7	.656						
CFT.8	.635						
BI.1			.760				
BI.2			.870				
BI.3			.833				
BI.4			.782				
BI.5							.734
BI.6							.751
BI.7							.797
BI.8						.727	
BI.9						.850	
BI.10						.677	
BI.11						.692	
BI.12					.852		
BI.13					.673		
BI.14					.706		

TMF= Top Management Facilitation, CFT=Cross-Functional Team, BI=Business Intelligence

Assigning Names to Extracted Factors

Seven factors are extracted for an IRBV scale, their values lies within .635 to .870 (see Table 1). The IRBV scale was primarily made up of three sub-variables: top management facilitation (10 items), cross functional team (8 items), and business intelligence (14 items). Following a correlational study, the elements of top management facilitation were separated into two components: TMF-1 to TMF-4 in component 4, which has been renamed top management devotion, and TMF-5 to TMF-10 in component 2, which has been renamed top management innovative behavior. CFT efforts refers to all 8 cross-functional team items extracted in component 1 (CFT-1 to CFT-8). The items of business intelligence are separated into four categories: BI-1 to B-I4 are extracted in component 3, which is referred to as business market intelligence, and BI-5

to BI-7 are extracted in component 7, referred to as business consumer intelligence, component 6 (business competitor intelligence) was used to extract items BI-8 to BI-11, and component 5 (business supplier intelligence) was used to extract items BI-11 to BI-14 (see Table 2). As a result, the internal resource scale is divided into seven variables following correlational analysis. As previously mentioned, the sub-scales of internal resource are further broken down into numerous components. So, the sub-scale of internal resource after correlational analysis is divided into (i) top management innovative behavior (TMIB); (ii) top management devotion (TMD); (iii) cross-functional team efforts (CFTE); (iv) business market intelligence (BMI); (v) business customer intelligence (BCSI); (vi) business competitor intelligence (BCMI); and (vii) business supplier intelligence (BSI).

Table No. 2 Assigning Names to Extracted Factors of IRBV Scale

Factor Components	Item No.	Items
	CFT.1	*Cross functional product development team members frequently interact with each other*
1		
Cross-Functional Team Efforts	CFT.2	*The effective NPDP is due to a cross functional team efforts*
	CFT.3	*All departments share information and ideas voluntarily that they feel it can positively affect NPDP*
	CFT.4	*All departments openly communicate with each other during NPDP*
	CFT.5	*For carrying out responsibilities and commitments all departments try their best during NPDP*
	CFT.6	*Our new product development team seems to be most concerned with finding the best solution When dealing with a task-related problem*
	CFT.7	*For ensuring interpersonal relationships within the new product development team, everyone provides support and encouragement*
	CFT.8	*Our new product development team focuses on learning from the failure when an approach to solving a problem fails*
2		
Top Mgmt. Innovative Behavior	TMF.5	*Top management facilitates by being personally involved throughout the entire NPDP*
	TMF.6	*Top management facilitates by positively valuing the employees' ideas and suggestions during NPDP*
	TMF.7	*Top management facilitates by promoting the development of innovative strategies in NPDP, even knowing that it is likely something may go wrong*
	TMF.8	*Top management facilitates by accepting occasional failures and considers them as something natural in business during NPDP*
	TMF.9	*Top management facilitates by supporting innovation and change in NPDP*
3	TMF.10	*Top management facilitates by promoting employees' creativity and risk assumption during NPDP*
Business Market Intelligence	BI.1	*Preliminary market assessment is done before NPDP*
	BI.2	*We perceive that we possess superior intelligence on our competitors*
	BI.3	*We perceive that we have superior intelligence on our customers*
4	BI.4	*We regularly monitor customers' buying habits before NPDP*
Top Mgmt. Devotion	TMF.1	*Top management always provide facilitation by playing a central role in new product development review*
	TMF.2	*Top management provide facilitation by encouraging strategic customers to adopt our new products*

	TMF.3	*Top management always facilitates by devoting the necessary resource to product development*
5	TMF.4	*Top management ensures facilitation by defining the aims of new product development*
Business Supplier Intelligence	BI.12	*We always analyze availability of raw materials or components before NPDP*
	BI.13	*We have strong knowledge about availability of external financing before NPDP*
	BI.14	*We possess information related to availability of labor before NPDP*
6 Business Competitor Intelligence	BI.8	*We always keep information regarding competitors' introduction of new products*
	BI.9	*We have knowledge about competitors' product improvements*
	BI.10	*We always analyze competitors' entry into new markets*
	BI.11	*We possess up to date information related to competitors' improvements in manufacturing processes*
7 Business Consumer Intelligence	BI.5	*We always analyze customers' product preferences*
	BI.6	*We always analyze customers' desires and demands*
	BI.7	*We always analyze competitors' prices*

n=318

Reliability Analysis

Cronbach's Alpha reliability test was employed to assess the reliability of all scales and subscales. Cronbach's Alpha is a measure of knowledge's internal consistency (Sureshchander et al., 2001; Walsh & Betz, 2001; Nunnally, 1978; Cronbach, 1971). Researchers suggest that a suitable number for indicating good construct reliability is 0.70 (e.g. Munro, 2005; Kerlinger, 1986). According to the findings of the alpha reliability test, each of the scales has a reliability value more than 0.70, as shown in Table 3. The alpha reliability of the 32-item IRBV scale is 0.799. Following correlational analysis, seven internal resource scale factors were identified: top management innovative behavior (TMIB) consists of four items, top management devotion (TMD) which consists of six items, cross-functional team efforts (CFTE) having eight items, business market intelligence (BMI) with four items, business consumer intelligence (BCSI) consists of three items, business competitor intelligence (BCMI) with four items, and business supplier intelligence (BSI) consists of three items and their alpha reliability values noticed were 0.801, 0.818, 0.849, 0.855, 0.760, 0.776, and 0.743 respectively.

Table No. 3 Alpha Reliability Coefficient

Sr. No	Scales and their Factor Components	No. of Items	Alpha Coefficient
IRBV		32	0.799
1	TMIB	04	0.801
2	TMD	06	0.818
3	CFTE	08	0.849
4	BMI	04	0.855
5	BCSI	03	0.760
6	BCMI	04	0.776
7	BSI	03	0.743

n=318, TMIB (Top Management Innovative Behavior), TMD (Top Management Devotion) CFTE (Cross-Functional Team Efforts), BMI (Business Market Intelligence), BCSI (Business Consumer Intelligence), BCMI (Business Competitor Intelligence), BSI (Business Supplier Intelligence)

CONCLUSION AND FUTURE RESEARCH DIRECTIONS

The goal of this study was to provide an internal resource-based view scale that could be used in the creation of new products. Data was gathered through self-administered questionnaires from significant industrial enterprises in Pakistan, including the Fast Moving Consumer Goods (FMCG), sports products, electronic products, fashion and textile related products, security products, and other industrial firms. The participants were new members of the development team who were making fresh development decisions. The interior resources were initially allocated to top management facilitation, a cross-functional team, and the current development team's business intelligence. However, following a correlational study, seven internal resources are identified as (i) TMIB; (ii) TMD; (iii) CFTE; (iv) BMI; (v) BCSI; (vi) BCMI; (vii) BSI.

The main contribution of this study is that, despite the fact that RBV is a widely explored theory in research, only a few empirical studies have been conducted in less developed and developing nations. As a result, by evaluating and discovering significant results of internal resources in the setting of developing countries like Pakistan, this study also validates the resource-based view theory. Marketing scholars have been chastised for paying little or no attention to using the RBV as a frame of reference in developing marketing related theory. Internal resource identification and use is of the highest quality inside the RBV framework. Other internal resources are frequently uncovered in future studies. These scales should be evaluated frequently with dependent and other variables in future research.

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