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EVALUATION OF MANUFACTURING COMPETENCY FACTORS ON PERFORMANCE OF AN AUTOMOBILE MANUFACTURING UNIT

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Abstract - This research tries to identify the manufacturing competency factors in automobile and auto-component manufacturing units in North India; to examine the effect of these factors on strategy factors and performance parameters of the manufacturing unit. Data has been collected from 118 automobile and auto-component manufacturing units. A questionnaire has been prepared to conduct survey in these companies. Multiple Linear Regression analysis, F-test and t-test have been employed to analyze the factors. In this paper models for various performance parameters with manufacturing competency factors in automobile and auto-component manufacturing units have been developed. The effect of manufacturing competency factors over performance factors has also been examined. The research has been carried out in the automobile sector in North India. Future research can be conducted in other parts of the country. Performance of automobile manufacturing unit can be related to other factors. The paper identified which competencies of organizations in manufacturing are required, and how to balance these competencies between various strategy and performance factors. The study allows linking of manufacturing competencies to a number of parameters and roles that are required at different stages in society such as sales, customer base, etc. This research reveals new insights about the manufacturing competency factors. This research has also evaluated the relation of these factors on strategic factors and other performance parameters in automobile and auto-component manufacturing units.

Keywords - Manufacturing Competency, Strategic Success, Performance Parameters, Automobile Units.

I. INTRODUCTION

In present times, there is a lot of competition among the companies, especially in automobile sector, as many Western industries like Volkswagen, Audi, Mercedes, etc. are coming up in India. Due to interest of these companies in Indian market the earlier Japanese companies like Suzuki, Hyundai, etc. are somewhat facing a tough competition for their survival here. The term "competency" refers to a combination of skills, attributes and behavior that are directly related to successful performance on the job, which are considered important for all staff of the Organization, regardless of their function or level. Competencies provide a sound basis for consistent and objective performance standards by creating shared language about what is needed and expected in an Organization.

Competency is also used as a more general description of the requirements of human beings in organizations and communities. According to the (Sanchez, 2002), competency is sometimes thought of as being shown in action in a situation and context that might be different the next time a person has to act. In emergencies, competent people may react to a situation following behaviors they have previously found to succeed. To be competent a person would need to be able to interpret the situation in the context and to have a repertoire of possible actions to take and have trained in the possible actions in the repertoire, if this is relevant. Regardless of training, competency would grow through experience. (Nordhaug, 1993) relates competence to professional requirements regarding productivity, and defines competence as

"The composite of human knowledge, skills and aptitude that may serve productive purposes in organizations"

The auto component industry in India has grown hand in hand with the industry and is in the process of transforming itself from being a "Job order fulfiller" to being an "Integrated organization". With the liberalization process having started in 1991, most auto component manufacturers in India have chosen the easy path of attempting to progress on operational or manufacturing capabilities. For advancing on technology capability dimension, they mostly relied on international collaborations (Sahoo et al., 2011).

II. LITERATURE REVIEW

Competencies refer to skills or knowledge that leads to superior performance. These are formed through an individual/organization's knowledge, skills and abilities and (Langfred, 2000) provide a framework for distinguishing between

poor performances through to exceptional performance. (Siwan Mitchelmore and Jennifer Rowley, 2010) Competence is a concept that has many faces and applications, and models of entrepreneurial competence are grounded in these various approaches to and notions of the concept of competence. Competencies can apply at organizational, individual, team. Competencies are individual abilities or characteristics that are key to effectiveness in work. These divergent perspectives suggest an alternative approach that would apply multiple theories to analysis competitiveness. (Wan & Yiu, 1999). According to (Rajesh K. Singh, 2007) A growth-supportive environment, raising funds from the market and a shortage of technical manpower are major constraining factors whereas cost, quality, and delivery time are the main pressures on the auto component sector. The auto component sector is flexible in developing strategies and those strategies relating to cost, quality; investment and competency development are significantly correlated with competitiveness.

(Klas Eric Soderquistet al., 2010) provided a holistic solution for supporting the implementation of a competency-based approach. It demonstrated the advantages of integrating the proposed competency framework and offers managerial insights and guidelines for similar implementations. (Rajesh K. Singh et al., 2010) examined various issues in context of Indian SSIs such as nature of pressures and constraints, competitive priorities, competencies development, areas of investment, and their relationship with performance. Competency based strategic management is the belief that some traits and behaviours are exhibited more consistently by strategists which can be identified, taught and assessed (Heffernan and Flood, 2000; Perdue et al., 2000 & Gail Steptoe-Warren et al., 2011). Thus, the concept of core competencies (Hamel and Prahalad, 1994 & Gail Steptoe-Warren et al., 2011) may be a useful framework assessing how strategic thinkers make choices that impact on the future of the organisation. Jurow (1996) believed that the ability of those in any sector to think strategically is bound by the frames of reference with which they are most familiar: the assumptions, beliefs and accumulated knowledge of a profession or institution. In its broadest sense, “competency” refers to the sum of experiences and knowledge, skills, traits, aspects of self-image or social role, values and attitudes a strategist has acquired during his or her lifetime (Mumford et al., 2000 & Gail Steptoe-Warren et al., 2011)

Competency ratings at performance appraisal were significantly lower than at selection interview. Correlations between ratings at interview and at performance appraisal were generally weak, though one showed significant relationships with five of the seven performance appraisal competencies. In addition, competency ratings were related to employee turnover and managerial development needs. A competency framework that is embedded in both selection and performance ratings can provide the organization with a clearer understanding of what determines managerial success, as well as informing better selection decisions (Anna Sutton and Sara Watson, 2013). The research shows that intermediaries can play an effective role in open innovation, provided they have the right set of competences. It can be concluded that the role of innovation intermediary is most relevant in the creation and development phases. The paper identified which competences of organizations in innovation are required, and how to balance the competences between the different partners, including the innovation intermediary. The study allows to link the type of goal of the collaboration to a number of best practices, including the competences and roles that are required at different stages. The paper combines the core innovation competences with the innovation value chain concept developed, and evaluate the resulting model (Wil Janssen et al., 2014). By suggesting and applying competence-based knowledge management, the key strategic issue is to explore the dynamics of synchronizing different-level competence development and to integrate different knowledge management perspectives. As our analyses show, both competence and knowledge management are moving towards an integrated and systemic view where the overall development challenge for both is the management of the whole system towards a self-generative and self-renewable organization. The challenge is not so much to have them all separately, but to integrate them and produce systemic efficiency according to the pursued strategy (Jianzhong Hong and Pirjo Ståhle, 2005).

The original core competence concept cannot help managers with today’s dynamic business environments. This paper theoretically reviews conceptions of core competence to enhance dynamism and better align theory and practice. The author concludes that a core competence could become more dynamic in three ways, by: balancing itself with the external environment and including external activities and processes; reducing path-dependency influences; and carefully “orchestrating” resources, by guidance rather than control, to release the inherent potential of project teams (Urban Ljungquist, 2013). It reveals that the comprehensive performance-linked competency model focuses on competency identification, competency scoring and aligning competency with other strategic HR functions in a three-phase systematic method which will subsequently help the organisation to sustain in the competition. It has further been shown how using Data Envelopment Analysis (DEA), cross-efficiency DEA and Rank Order Centroid (ROC), an organization can align individual performances and their competencies in terms of efficiency (Atri Sengupta, 2013).

III. FACTORS

Based on the literature studied, following factors have been finalized:

Manufacturing Competency Factors

- Product Concept
- Product Design & Development
- Process Planning
- Raw Material & Equipment
- Production Planning & Control

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- Quality Control

Strategic Success Factors
- Strategy Agility
- Management
- Team Work
- Administration
- Interpersonal

Output Factors
- Production capacity
- Production time
- Lead time
- Quality
- Reliability
- Productivity
- Growth and expansion
- Competitiveness (or competition)
- Sales (annually)
- Profit (annually)
- Market Share
- Customer Base

IV. Regression Analysis: Impact of the Manufacturing Competency over the Strategic Success

Multiple linear regression model was applied in this section to develop the mathematical model in between the dependent variable as all parameters of the strategic success and independent variable as all the parameters of the manufacturing competencies. The mathematical model develop were each unique for all the parameters of the strategic success. ANOVA analysis was also performed for the significances of the regression model and the significances of the independent parameters were identified with the t test for the regression coefficients.

Table 1: Regression Analysis of the Strategic Agility as Dependent and Parameters of Manufacturing Competencies as Independent

	Un standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	2.775	.743		3.734	.000
Product Concept	.101	.117	.111	.865	.389
Product Design & Development	.159	.109	.231	1.464	.146
Process Planning	-.098	.085	-.143	-1.147	.254
Raw Material & Equipment	.368	.160	.369	2.293	.024
Production Planning	.070	.137	.075	.510	.611
Quality Control	.243	.105	.267	2.318	.022

The regression analysis showed that strategic agility was significantly affected by the raw material & equipment and quality control parameters of the manufacturing competencies. The regression model was significant as $F = 52.00$, $p < 0.05$. The model develop explains the 73.0% of the information about the dependent variable.

$$\textbf{strategic agility} = 2.77 + 0.368\ \textbf{raw material}\ \&\ \textit{equipment} + 0.243\ \textit{quality control}$$

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Table 2: Regression Analysis of the Management as Dependent and Parameters of Manufacturing Competencies as Independent

	Un standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	3.068	1.067		2.876	.005
Product Concept	-.193	.168	-.148	-1.152	.252
Product Design & Development	.498	.156	.505	3.187	.002
Process Planning	-.017	.122	-.017	-.138	.890
Raw Material & Equipment	.534	.230	.375	2.318	.022
Production Planning	.080	.196	.060	.406	.686
Quality Control	.141	.151	.108	.934	.352

The regression analysis showed that management was significantly affected by the *product design & development* and *raw material & equipment* parameters of the manufacturing competencies. The regression model was significant as $F = 51.03$, $p < 0.05$. The model develop explains the 73.5% of the information about the dependent variable.

$$\textit{management} = 3.06 + 0.498\ \textit{product design \& devlopment} + 0.534\ \textit{raw material \& equipment}$$

Table 3: Regression Analysis of the Team Work as Dependent and Parameters of Manufacturing Competencies as Independent

	Un standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	.463	.815		.568	.571
Product Concept	-.093	.129	-.063	-.719	.473
Product Design & Development	.291	.119	.261	2.442	.016
Process Planning	-.032	.094	-.029	-.347	.729
Raw Material & Equipment	.618	.177	.384	3.498	.001
Production Planning	.360	.151	.241	2.383	.019
Quality Control	.282	.115	.192	2.448	.016

The regression analysis showed that team work was significantly affected by the product design & development, raw material & equipment, production planning and quality control parameters of the manufacturing competencies. The regression model was significant as $F = 134.70$, $p < 0.05$. The model develop explains the 88.0% of the information about the dependent variable.

$$\textit{team work} = 0.463 + 0.291\ \textit{product design \& devlopment} + 0.618\ \textit{raw material \& equipment} + 0.360\ \textit{production planning} + 0.282\ \textit{quality control}$$

Table 4: Regression Analysis of the Administration as Dependent and Parameters of Manufacturing Competencies as Independent

	Un standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	2.309	.466		4.1053	.000
Product Concept	-.082	.073	-.121	-1.115	.267
Product Design & Development	.176	.068	.345	2.582	.011
Process Planning	.023	.053	.046	.438	.662
Raw Material & Equipment	.097	.101	.131	.965	.337
Production Planning	.118	.086	.172	1.377	.171
Quality Control	.251	.066	.373	3.813	.000

The regression analysis showed that administration was significantly affected by the product design & development and quality control parameters of the manufacturing competencies. The regression model was significant as $F = 71.70$, $p < 0.05$. The model develop explains the 81.0% of the information about the dependent variable.

$$\textit{administration} = 2.309 + 0.176\ \textit{product design \& devlopment} + 0.251\ \textit{quality control}$$

ISSN 2348 - 2249
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(IJMDEBM)

Table 5: Regression Analysis of the Interpersonal as Dependent and Parameters of Manufacturing Competencies as Independent

	Un standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	2.551	.954		2.674	.009
Product Concept	-.401	.150	-.310	-2.674	.009
Product Design & Development	.581	.140	.595	4.159	.000
Process Planning	-.179	.109	-.185	-1.638	.104
Raw Material & Equipment	.003	.206	.002	.014	.989
Production Planning	.357	.175	.272	2.036	.044
Quality Control	.630	.135	.489	4.775	.000

The regression analysis showed that interpersonal was significantly affected by the product concept, product design & development, production planning and quality control parameters of the manufacturing competencies. The regression model was significant as F = 67.15, p < 0.05. The model develop explains the 78.0% of the information about the dependent variable.

$$\boldsymbol{interpersonal = 2.55 - 0.401 product\ concept + 0.581\ product\ design\ \&\ devlopment + 0.357\ production\ planning + 0.630\ quality\ control}$$

V. Regression Analysis: Impact of the Manufacturing Competency over Output

Multiple linear regression model was applied in this section to develop the mathematical model in between the dependent variable as all process of output and independent variable as all the parameters of the strategic success. The mathematical model develop were each unique for all the process of the output. ANOVA analysis was also performed for the significances of the regression model and the significances of the independent parameters were identified with the t test for the regression coefficients.

Table 6: Regression Analysis of the Production Capacity as Dependent and Parameters of Manufacturing Competency as Independent

	Un Standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.111	.239		4.644	.000
Product Concept	.287	.225	.222	1.272	.206
Product Design & Dev.	-.181	.245	-.158	-.738	.462
Process Planning	-.177	.219	-.137	-.808	.421
Raw Material & Equipment	.574	.258	.487	2.222	.028
Prod. Plan & Control	-.274	.308	-.179	-.890	.376
Quality Control	.656	.203	.509	3.238	.002

The regression analysis showed that production capacity was significantly affected by the Raw Material & Equipment and Quality Control parameters of the manufacturing competency. The regression model was significant as F = 19.48, p < 0.05. The model develop explains the 51.0% of the information about the dependent variable.

$$\boldsymbol{Production\ Capacity = 1.111 + 0.574\ Raw\ Material\ \&\ Equipment + 0.656\ Quality\ Control}$$

Table 7: Regression Analysis of the Production Time as Dependent and Parameters of Manufacturing Competency as Independent

	Un Standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig.
(Constant)	1.051	.256		4.100	.000
Product Concept	.406	.242	.279	1.680	.096
Product Design & Dev.	.667	.263	.519	2.539	.013
Process Planning	-.871	.235	-.598	-3.709	.000

ISSN 2348 - 2249
Volume-2, Issue-2, June-2014
International Journal for Multi Disciplinary Engineering and Business Management
(IJMDEBM)

Raw Material & Equipment	.249	.277	.188	.900	.370
Prod. Plan & Control	-.437	.330	-.254	-1.327	.187
Quality Control	.833	.217	.574	3.836	.000

The regression analysis showed that production time was significantly affected by the *Product Concept, Product Design & Development, Process Planning & Quality Control* parameters of the manufacturing competency. The regression model was significant as F = 23.44, p < 0.05. The model develop explains the 56.0% of the information about the dependent variable.

$$\textit{Production Time} = 1.051 + 0.406\ \textit{Product Concept} + 0.667\ \textit{Product Design \& Development} - 0.871\ \textit{Process Planning} + 0.833\ \textit{Quality Control}$$

Table 8: Regression Analysis of the Lead Time as Dependent and Parameters of Manufacturing Competency as Independent

	Un Standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.208	.287		4.212	.000
Product Concept	-.018	.270	-.014	-.067	.947
Product Design & Dev.	1.177	.294	.997	4.002	.000
Process Planning	-.646	.263	-.484	-2.461	.015
Raw Material & Equipment	-.077	.310	-.063	-.249	.804
Prod. Plan & Control	-.301	.369	-.190	-.815	.417
Quality Control	.332	.243	.249	1.364	.175

The regression analysis showed that lead time was significantly affected by the *Product Design & Development* and *Process Planning* parameters of the manufacturing competency. The regression model was significant as F = 9.732, p < 0.05. The model develop explains the 35.0% of the information about the dependent variable.

$$\textit{Lead Time} = 1.208 + 1.177\ \textit{Product Design \& Dev.} - 0.646\ \textit{Process Planning}$$

Table 9: Regression Analysis of the Quality as Dependent and Parameters of Manufacturing Competency as Independent

	Un Standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig.
(Constant)	1.317	.227		5.794	.000
Product Concept	.272	.214	.219	1.268	.208
Product Design & Dev.	.409	.233	.374	1.756	.082
Process Planning	-.227	.208	-.183	-1.089	.278
Raw Material & Equipment	.302	.245	.268	1.233	.220
Prod. Plan & Control	-.211	.292	-.144	-.722	.472
Quality Control	.258	.193	.209	1.340	.183

The regression analysis showed that quality was significantly affected by the *Product Design & Development* parameter of the manufacturing competency. The regression model was significant as F = 20.07, p < 0.05. The model develop explains the 52.0% of the information about the dependent variable.

$$\textit{Quality} = 1.317 + 0.409\ \textit{Product Design \& Development}$$

Table 10: Regression Analysis of the Reliability as Dependent and Parameters of Manufacturing Competency as Independent

	Un Standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig.
(Constant)	.279	.245		1.137	.258
Product Concept	.189	.231	.125	.819	.414

ISSN 2348 - 2249
Volume-2, Issue-2, June-2014
International Journal for Multi Disciplinary Engineering and Business Management
(IJMDEBM)

Product Design & Dev.	.085	.251	.063	.339	.736
Process Planning	.456	.224	.300	2.031	.045
Raw Material & Equipment	.487	.264	.353	1.843	.068
Prod. Plan & Control	-.294	.315	-.164	-.934	.352
Quality Control	.249	.208	.164	1.199	.233

The regression analysis showed that reliability was significantly affected by the *Process Planning* and *Raw Material & Equipment* parameters of the manufacturing competency. The regression model was significant as F = 31.361, p < 0.05. The model develop explains the 63.0% of the information about the dependent variable.

$$\textit{Reliability} = 0.279 + 0.456\ \textit{Process Planning} + 0.487\textit{Raw Material} \ \& \ \textit{Equipment}$$

Table 11: Regression Analysis of the Productivity as Dependent and Parameters of Manufacturing Competency as Independent

	Un Standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	.942	.329		2.862	.005
Product Concept	.027	.310	.017	.086	.932
Product Design & Dev.	.465	.338	.333	1.378	.171
Process Planning	-.273	.302	-.172	-.904	.368
Raw Material & Equipment	.386	.355	.268	1.086	.280
Prod. Plan & Control	-.665	.423	-.355	-1.570	.119
Quality Control	.840	.279	.532	3.009	.003

The regression analysis showed that productivity was significantly affected by the *Quality Control* parameter of the manufacturing competency. The regression model was significant as F = 11.54 p < 0.05. The model develop explains the 38.0% of the information about the dependent variable.

$$\textit{Productivity} = 0.942 + 0.840\ \textit{Quality Control}$$

Table 12: Regression Analysis of the Growth & Expansion as Dependent and Parameters of Manufacturing Competency as Independent

	Un Standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	.403	.303		1.329	.187
Product Concept	.311	.286	.216	1.089	.279
Product Design & Dev.	.436	.311	.343	1.402	.164
Process Planning	-.512	.278	-.356	-1.845	.068
Raw Material & Equipment	-.038	.327	-.029	-.117	.907
Prod. Plan & Control	.571	.390	.336	1.465	.146
Quality Control	.164	.257	.115	.640	.524

The regression analysis showed that growth and expansion was significantly affected by the *Process Planning* parameter of the manufacturing competency. The regression model was significant as F = 10.713, p < 0.05. The model develop explains the 37.0% of the information about the dependent variable.

$$\textit{Growth} \ \& \ \textit{Expansion} = 0.403 - 0.512\ \textit{Process Planning}$$

Table 13: Regression Analysis of the Competitiveness as Dependent and Parameters of Manufacturing Competency as Independent

	Un Standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig.

ISSN 2348 - 2249
Volume-2, Issue-2, June-2014
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(Constant)	.333	.237		1.403	.163
Product Concept	.216	.224	.163	.964	.337
Product Design & Dev.	.212	.243	.181	.869	.387
Process Planning	.146	.217	.111	.672	.503
Raw Material & Equipment	.307	.256	.255	1.199	.233
Prod. Plan & Control	.483	.305	.309	1.582	.117
Quality Control	-.375	.201	-.284	-1.862	.065

The regression analysis showed that competitiveness was significantly affected by the *Quality Control* parameters of the manufacturing competency. The regression model was significant as $F = 21.715$, $p < 0.05$. The model develop explains the 54.0% of the information about the dependent variable.

$$\textit{Competitiveness} = 0.333 - 0.375\ \textit{Quality Control}$$

Table 14: Regression Analysis of the Sales (Annually) as Dependent and Parameters of Manufacturing Competency as Independent

	Un Standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.178	.338		3.490	.001
Product Concept	-.366	.318	-.249	-1.149	.253
Product Design & Dev.	.388	.346	.299	1.122	.264
Process Planning	.057	.309	.039	.183	.855
Raw Material & Equipment	.526	.364	.393	1.443	.152
Prod. Plan & Control	.159	.434	.092	.367	.714
Quality Control	-.144	.286	-.098	-.503	.616

The regression analysis showed that sales (annually) were not significantly affected by parameters of the manufacturing competency. The regression model was significant as $F = 6.098$, $p < 0.05$. The model develop explains the 25.0% of the information about the dependent variable.

$$\textit{Sales (Annually)} = 1.178$$

Table 15: Regression Analysis of the Profit (Annually) as Dependent and Parameters of Manufacturing Competency as Independent

	Un Standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	.962	.371		2.593	.011
Product Concept	-.358	.350	-.217	-1.024	.308
Product Design & Dev.	.589	.381	.404	1.548	.124
Process Planning	-.084	.340	-.051	-.247	.805
Raw Material & Equipment	.794	.400	.528	1.983	.050
Prod. Plan & Control	-.108	.477	-.055	-.227	.821
Quality Control	-.206	.314	-.125	-.656	.513

The regression analysis showed that profit annually was significantly affected by the *Raw Material & Equipment* parameter of the manufacturing competency. The regression model was significant as $F = 7.261$, $p < 0.05$. The model develop explains the 28.0% of the information about the dependent variable.

$$\textit{Profit (Annually)} = 0.962 + 0.794\ \textit{Raw Material \& Equipment}$$

ISSN 2348 - 2249
Volume-2, Issue-2, June-2014
International Journal for Multi Disciplinary Engineering and Business Management
(IJMDEBM)

Table 16: Regression Analysis of the Market Share as Dependent and Parameters of Manufacturing Competency as Independent

	Un Standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.263	.217		5.825	.000
Product Concept	-.154	.204	-.139	-.754	.452
Product Design & Dev.	.509	.222	.520	2.290	.024
Process Planning	-.927	.199	-.837	-4.669	.000
Raw Material & Equipment	.558	.234	.553	2.386	.019
Prod. Plan & Control	1.359	.279	1.037	4.875	.000
Quality Control	-.770	.184	-.697	-4.192	.000

The regression analysis showed that market share was significantly affected by the *Product Design & Development, Raw Material & Equipment, Production Planning & Control* and *Quality Control* parameters of the manufacturing competency. The regression model was significant as F = 15.403, p < 0.05. The model develop explains the 45.0% of the information about the dependent variable.

$$\textbf{Market Share} = 1.263 + 0.509\ \textbf{Product Design}\ \&\ Development + 0.558\ Raw\ Material\ \&\ Equipment + 1.359\ Production\ Planning\ \&\ Control - 0.770\ Quality\ Control$$

Table 17: Regression Analysis of the Growth & Expansion as Dependent and Parameters of Manufacturing Competency as Independent

	Un Standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.247	.298		4.190	.000
Product Concept	-.139	.281	-.105	-.494	.622
Product Design & Dev.	.661	.305	.567	2.165	.033
Process Planning	-.588	.273	-.446	-2.158	.033
Raw Material & Equipment	-.145	.321	-.121	-.453	.652
Prod. Plan & Control	.894	.383	.573	2.335	.021
Quality Control	-.002	.252	-.001	-.007	.994

The regression analysis showed that customer base was significantly affected by the *Product Design & Development, Process Planning* and *Production Planning & Control* parameters of the strategic success. The regression model was significant as F = 7.026, p < 0.05. The model develop explains the 28.0% of the information about the dependent variable.

$$\textbf{Customer Base} = 1.247 + 0.661\ \textbf{Product Design}\ \&\ Development - 0.588\ Process\ Planning + 0.894\ Production\ Planning\ \&\ Control$$

VI. Conclusion

Based on the above analysis, it is found that Product Design & Development and Quality Control are the major manufacturing competency factors affecting the strategies of an organization.

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